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# THE OPERATIVE TREATMENT OF ACUTE SUPPURATIVE APPENDICITIS.

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THE removal of a suppurative or gangrenous appendix is generally a simple matter. At times, however, the technical difficulties encountered will require the exercise of considerable ingenuity. The necessity for and method of drainage always calls for accurate judgement as to the severity of the condition found at operation and the probable future course of events.

## The Incision.

The incision adopted is almost invariably an oblique one on the right side above and anterior to the anterior superior iliac spine and at least six and a third centimetres (two and a half inches) in length. The peritoneum is exposed by splitting the muscles in the direction of their fibres immediately lateral to the outer border of the right rectus (McBurney's method). For dealing with mobile appendices or with those with few or no adhesions this method leaves little to be desired and even extensively adherent appendices may be removed through this incision by the adoption of one of the following expedients.

1. After lightly crushing the base of the appendix is divided between two ligatures. A clamp (holding gauze over the stump of the severed part) applied over the distal ligature will help in the control during the subsequent removal. The stump is invaginated in the usual way and the appendix removed by working from the base to the tip, each successive presenting part of the mesoappendix is ligated and divided, each part as it is divided renders the adjacent part more accessible. A little judicious traction on the clamp will help in doing this.

2. The position of the free border of the appendix, that is the border opposite the attachment of the mesoappendix, is determined and there any peritoneal membrane, "veil" or band which may be responsible for binding the organ down is carefully divided at that situation. By insinuating the finger tip or scalpel handle through the opening thus made and then beneath the appendix the latter may be gently stripped from its bed of areolar tissue when its mesentery proper becomes mobilized and ligation proceeded with.

However, it is occasionally imperative to enlarge the incision and this should be done without hesitation when pus is present and difficulty is experienced in recognizing or reaching the whole of the appendix. Much valuable time will thus be saved and the reserve of the patient not unnecessarily exhausted. This extension may be made in one of four ways.

- (i) Robert Weir's method: The splitting of the deeper muscles (internal oblique and *transversus abdominis*) is prolonged medially to the outer edge of the rectus sheath which is then opened and the

division of the anterior wall or the sheath continued in the same direction for the requisite distance, if necessary to the mid-line. The rectus is then retracted medially and the posterior wall of its sheath and the peritoneum are incised for the same distance and in the same direction. It is often necessary to lengthen the skin incision to gain the desired access in this way, the skin and subcutaneous fat being separated from the rectus sheath and retracted medially.

This method is useful when the adherent appendix or whole matted mass is directed medially and cannot be readily freed through the primary incision.

- (ii) After the side of the rectus sheath is opened in the manner described above the incision in its anterior wall is directed downward and medially if necessary as far as the right pubic tubercle, the rectus retracted medially and the posterior layer of its sheath and peritoneum is divided in the same way. It may be necessary here to ligate and divide the inferior epigastric artery if it falls in the line of incision in the sheath. This occurs when the artery is placed far laterally or the incision is a long one. This method gives excellent approach to an appendix adherent to or beyond the brim of the pelvis and reasonable access to the right side of the pelvis minor.

- (iii) The incision is extended upward in the outer part of the sheath of the rectus, the reverse of that in a downward direction as described above, in preference to the making of a fresh rectus or mid-line incision. By this means access is gained to an organ adherent in an upward and inner direction. This gives excellent access to the whole of the caecum and ascending colon when they are reasonably mobile.

- (iv) The incision is extended upward and slightly outward from the lateral angle of the incision. The skin incision is directed obliquely upward and outward toward the costal margin in line with the original incision. The split in the external oblique aponeurosis can then be extended upward and outward throughout the extent of the skin incision and in the same line. As the aponeurosis gives way to the flat muscular belly, it will be necessary to snip a small fibrous band here and there, but no muscle fibres need be cut. The internal oblique and *transversus abdominis* are next cut at right angles to the direction of their fibres, that is in the same line as the skin incision and the separation of the external oblique. These muscle bellies will be found rather thick on occasion and, of course, some of the anterior branches of the thoracic nerves in this situation will be severed. I have not seen any of the ill effects described by some authors when these nerves are cut, but this may be partly due to only two branches or at most three being divided. A few small vessels will need to be secured. The *fascia transversalis* and peritoneum are then incised in the same line.

When the wound is closed the *transversus* and internal oblique are sutured separately. They each have strong fascial coverings and the sutures hold securely. Their cut edges will be found to have

retracted, but can easily be picked up. The external oblique muscle and aponeurosis are then sutured and give great strength to the wound as the fibres are separated and not cut across. In the presence of pus, the muscle bellies, having a good blood supply, show little tendency to slough. The necrotic masses extruded from infected wounds of this kind are more commonly subcutaneous fat and fascia, occasionally aponeurosis. This incision gives better access than any other to the whole of the area behind and to the outer sides of the caecum and ascending colon. It is an extension easily made, in the first place for two or three centimetres; if necessary it can be continued up to the costal margin, until the highest point reached by the adherent or retrocaecal appendix is brought within reach. When this is done a new area of the abdominal cavity is not exposed to the danger of contamination as must be the case when a second incision is made, such as a pararectal or mid-line incision. A retrocaecal gangrenous appendix, no matter how long, with small localized collections of pus can be completely removed in a short time and a difficult operation made relatively simple.

An enlargement of the wound toward the middle line by Weir's method or downward extension through the rectus sheath may at times be combined with the extension upward and outward at the outer angle of the wound as described. Of course, any extension upward through the rectus sheath at the inner angle of the original wound would be an alternative to enlargement of the wound from the outer angle.

The transverse incision of Davis<sup>(1)</sup> has been recommended for operations for abscess. It extends transversely at a point a little above the anterior superior iliac spine. The external oblique aponeurosis is cut across in the same direction, but the internal oblique and *transversus* are split in the direction of their fibres. Its advocates state that it gives more room when an abscess has to be dealt with. Since the extent of an abscess in this situation can generally be gauged before operation or by palpation under anaesthesia before the incision is made, the method of Davis should be satisfactory. However, it is difficult to imagine how it could afford reasonable access to the right pre renal and sub-renal regions. It would also appear that the attempt to extend the incision either in an upward or a downward direction could be made only at its inner angle, as its lateral angle is situated rather far out in the loin. An extension other than one at either the inner or the outer angle would result in a T-shaped wound whose strength would be questionable.

As there is generally a possibility of wound contamination, plain gut is used to suture the wound and any extension.

A second incision may occasionally be necessary, as for example when a mass can be palpated deep in the pelvis or high up under the liver. The former will in most instances be diagnosed *per vaginam* before operation and a mid-line incision or colpotomy done in the first place.

As stated previously, it is wise to avoid a second incision in the presence of pus which would expose a new field to contamination.

#### Gangrenous or Acutely Inflamed Appendix with a Small Amount of Pus.

There is a group in which the appendix is gangrenous or acutely inflamed and the pus is apparently in small quantities as the separation of recent soft fibrinous adhesions is preceded with. Free pus, however small in quantity, is a more serious matter, as there will then be present some degree of general peritonitis and pus in the pelvis will often be demonstrated. Passing reference may also be made to the small pockets of cheesy or cheese-cream pus met with on rare occasions when an adherent appendix which has been subject to previous acute attacks is being dissected. This so-called "slack" abscess is apparently innocuous and usually sterile on culture.

With the acute group a general turbid exudate is frequently present.

The abdomen is gently palpated after the patient is anaesthetized and before the incision is made. When one suspects an acutely inflamed appendix which does not present on following the conveniently placed anterior muscular band of the caecum to its lower end, gauze strips must be introduced immediately and used gently to pack off the neighbouring cavity and intestines, special care being taken to guard the right kidney pouch. The finger then palpates the organ which is freed by gentle stripping from below. This may liberate a little pus which is readily absorbed by the gauze packs. As a general rule omentum adherent to the appendix should be ligated and divided as peeling it off may liberate pus. The mesoappendix is ligated and cut and the stump divided. A clamp is applied beforehand immediately beyond the point of division, as a large appendix may be merely a pus sac. When the adjacent caecum is much indurated or friable, invagination by a purse-string suture or by over-sewing of the stump may not be practicable. It is then covered by mesoappendix or omentum if either of these structures is available. It is well at this stage to inspect the caecum as a fistula may have existed between it and one part of the appendix. This results in an apparent perforation of the caecum when the adherent appendix is separated from it.

When difficulty occurs in freeing the appendix one looks for the band or membrane binding it down. This is divided carefully for about two and a half centimetres along the border of the appendix opposite its mesenteric attachment, that is the inner border when the appendix is in the ileo-caecal position, the outer border when it is lying in the pelvis or to the outer side of the caecum and directed upward. The finger can then be introduced behind the appendix and its mesentery and these structures mobilized by gentle stripping, when any remaining portion of membrane is visualized and divided. It may be necessary to enlarge the incision a little in one of the ways described in order to



complete the isolation of the appendix. The meso-appendix will be found to have only an anterior serous layer remaining.

At times the finding of a buried appendix will be difficult. This is best done by following the anterior band to the point where it disappears in an unusual manner beneath the peritoneum. Here a small incision is made in the peritoneum reflected from the caecum toward the iliac fossa. By stripping up a small part of the fundus of the caecum through this aperture the stump will appear or can be palpated when the direction of the appendix will usually be found to be upward behind the caecum. The peritoneal reflection is then divided piece by piece as may be found necessary, more often to the outer side of the caecum. The latter is mobilized to the required extent and the appendix demonstrated adherent to it or to the posterior abdominal wall. By gentle pressure the appendix and its mesentery can then be separated from either or both these structures. The mesoappendix will then be found to consist of areolo-fatty tissue and vessels without any serous covering whatever.

During these manœuvres the gauze packs will need readjustment. In addition to guarding the general peritoneal cavity against contamination by pus they absorb the constant free oozing which results from stripping in an inflamed area.

For these buried appendices Treves recommended division of the peritoneum of the iliac fossa at the outer side of the caecum and mobilization of the affected part. This variety of acute appendicitis is often met with and calls for much ingenuity at operation. Stripping must be done in some way and a definite plan of procedure is most helpful. The incision is enlarged as soon as a serious doubt arises as to the adequacy of access.

If, when an acute appendicitis is present, no pus is set free, drainage is unnecessary. When a small amount presents or is spilled, it is absorbed by the gauze packs and its spread prevented. Whenever frank pus is seen, a tube is introduced to the point whence it is emerging and brought out through a stab wound above, below or to either side of the incision by the most direct route. When the pus is around a gangrenous tip, high up behind or to the outer side of the caecum, the tube is brought out in the loin at the point nearest the focus. Pus limited to the pelvis will require a suprapubic tube in the mid-line or slightly to the right. It must always be looked for in this situation as large amounts of pus may trickle down and collect here when its absence or the small amount in the right iliac fossa would not lead one to suspect it.

With a large amount of turbid fluid bordering on purulence it is wise to leave a tube in the pouch of Douglas, but drainage of the general peritoneal cavity in the presence of a moderate amount of thin turbid or serous exudate is unnecessary.

#### Perforated Appendix with General Peritonitis.

In an aged or debilitated patient or one coming late to operation, time must not be lost after perforation of the appendix and the onset of general

peritonitis. The appendix is allowed to remain if extensively adherent and a large tube or cigarette drain is brought out from the point of perforation, great care being taken to avoid disturbing the surrounding intestines and omentum and breaking down a barrier already incomplete. Usually the appendix is removed and a tube introduced to its site.

Further drainage is always necessary, a tube being placed in the pouch of Douglas through a median suprapubic stab wound. The fingers of the left hand are cautiously passed into the pelvis from the wound. A surprising amount of pus will frequently well up when a long wide strip of gauze is guided along the fingers down over the brim to mop up the excess. This is done to prevent the spilling of pus above the brim when the fingers inside are guiding the suprapubic tube to the bottom of the pelvis. No attempt is made to clean out the pelvis completely.

In these operations gentle palpation inside the abdomen convinces one that the intestines and omentum frequently wall off a wide area of the lower segment of the abdomen together with the pelvis, at times with the right side of the pelvis only, thus converting an apparently general into a localized peritonitis. It is probable that this occurs very commonly and that the successful results of many operations for general peritonitis depend on a wide area being walled off effectively from the remainder of the abdomen. The alternative view is that this condition is merely an early stage of a general peritonitis.

#### Abscess.

An abscess may be palpated before operation, at times after the patient has been anaesthetized, or it may not be evident until the abdomen is opened. Its position may be anterior, posterior, lateral or pelvic.

#### Anterior Abscess.

Anterior abscess may be suspected from localized bulging of the belly wall. Occasionally the skin may be red and oedematous which means that the abscess is eroding the parietes. At a recent operation I found the external oblique aponeurosis grey and gelatinous, with the pus cavity immediately deep to it, the abscess having penetrated the peritoneum, *fascia transversalis*, *transversus abdominis* and internal oblique.

Anterior abscess may be described as one adherent to anterior parietal peritoneum. Adhesion occurs over a variable area, often an extensive one.

The incision is a small oblique or pararectal one according to the position of the tumour and placed directly over it. The parietal peritoneum is opened cautiously near the centre of the mass at its most prominent point. Pus usually escapes at once. If not, it is soon found on separating adjacent parts of bowel and mesentery. A finger is gently insinuated into the abscess, its cavity explored and any concretions found are removed. A tube is introduced and brought out through the wound which is



closed with a few sutures. In the majority of patients, always old or feeble subjects, no more is attempted at the time. When the abscess is very small and the appendix evident, the latter may be removed after cleaning out all pus from the cavity with narrow gauze strips. This obviates a second operation, but involves the risk of breaching the abscess wall. During the separation of the appendix it may be impossible to avoid doing this. A tube at the site and another in the pelvis will then be advisable. As a general rule an appendix with an associated abscess adherent to the anterior parietal peritoneum should not be removed when the abscess can be drained without opening the general peritoneal cavity.

If drainage only is established, the appendix is removed in from three weeks to three months, when it will be found to have assumed a surprisingly innocent appearance. The more time allowed to elapse before this is attempted, the less will be the likelihood that the surgeon will have to deal with pus or extensive adhesions at the second operation. Removal is always advisable as perforation with general peritonitis or abscess formation may occur. This takes place in about 20% of patients according to most authorities.<sup>(2)</sup>

#### *Posterior Abscess.*

The free peritoneal cavity and the bowel are situated between a posterior abscess and the anterior abdominal wall. As the abscess is to be drained across this unprotected space, the amount of infective material should be reduced to a minimum. Surgeons are inclined to remove the appendix. This involves little if any extra risk, as the peritoneal cavity has already been opened.

A free incision is made and the surrounding viscera are carefully packed off. A prominent part of the mass is selected and the omentum when adherent is stripped from a small area. Separation of the bowel and mesentery is carried out at this point until pus appears, the opening being kept very small. Pus is swabbed away as it escapes and narrow strips of gauze are lightly packed into the abscess cavity until all free pus has been removed. Concretions are searched for. A tube to fit the small opening is introduced into the cavity and brought outside the abdomen through a stab wound. As all free pus has been removed, the tube is not called upon to function for a few hours by which time the viscera will have adhered to the intra-abdominal part and no leakage will occur. A second opening and tube in the abscess has been recommended, to be placed at its most dependent part. A single tube through an opening at its most prominent part is preferable, except perhaps when a very large abscess passes deeply into the pelvis; in an adult female this is best drained in the first place by a posterior colpotomy. A second tube is more useful if placed as a safeguard in the pelvis.

To remove the appendix the abscess is cleaned out as described above. Matted viscera are separated until the appendix is found. Its recognition is not always easy as it frequently bears a close

resemblance to the small intestine. It is freed by separating the adherent intestines and mesentery from it. Any necessary force in stripping must be directed toward the appendix and trauma to the bowel avoided. After removal a tube is introduced to the abscess site.

Whether the abscess is merely drained or the appendix taken out as well, a suprapubic tube is placed in the pouch of Douglas in anticipation of a possible leakage or general peritonitis due to contamination.

It is unnecessary to drain the wound or to use any protective preparation for it. If contamination has occurred, the raw surfaces are washed with saline solution after suture of the parietal peritoneum.

#### *Right Lateral Abscess.*

The origin of any inflammatory swelling in the right loin may prove to be a suppurating appendix. The tumour may appear so far out as to simulate a perinephric abscess or a strangulated hernia at the trigonum of Petit and may point at the surface before coming to operation. Incision over the mass and a muscle splitting approach and drainage constitute the only immediate treatment. The peritoneal cavity is rarely opened. When a finger is introduced, the abscess will be found directed toward the site of the appendix. The latter is removed through the usual oblique incision at a later date when healing of the drainage wound has taken place.

However, a lateral abscess is usually situated about the outer edge of the caecum and is palpated there. The peritoneum need not be opened in many instances. A finger is insinuated between it and the abdominal wall at the outer angle of the wound and the two structures gently separated laterally and then posteriorly. The finger tip taps the abscess at a weak point and a tube is passed into the cavity and brought out in a straight line through a stab wound in the loin. The success of this method depends on one of two circumstances. Parietal peritoneum adherent to the abscess becomes friable and necrotic as the latter extends laterally and gives way before the finger tip. Buried appendices are frequently retrocaecal, at times apparently retroperitoneal and in the latter case at least an abscess extending laterally would be extraperitoneal.

The above procedure is safe and effective. When it fails to reach pus, the abscess is dealt with according to its position, anterior or posterior.

#### *Pelvic Abscess.*

For pelvic abscesses in males or children the abdomen is opened in the mid-line above the pubes. The abscess is usually not adherent to the peritoneum unless it has reached very large dimensions; it is therefore treated in the same way as a posterior abscess. After the omentum is removed from a limited area a small opening is made at its most prominent anterior point, the cavity cleared of pus and drained by a suprapubic tube brought out

through a stab wound near the lower end of the incision.

Moynihan recommends delay until the abscess is adherent to the rectum. It is then drained *per rectum* by plunging closed scissors into the mass and opening the blades. In adult females drainage is best carried out by means of a posterior colpotomy. The appendix is often removed at once as the possible area of periteal involvement is small and a single drain will suffice.

I have not observed a case in which an abscess has pointed below the inguinal ligament or in a hernial sac. The obvious immediate treatment would be drainage.

#### *Subphrenic Abscess.*

An abscess in the subphrenic region having its origin in an appendix may be intraperitoneal or extraperitoneal on the right side. The subpleural approach is preferable to and gives as good access as the transpleural approach and is followed less frequently by empyema. The extraperitoneal method as advocated by Nather and Oschner,<sup>(3)</sup> however, appears better than either of the older methods, especially when a doubt exists as to the diagnosis or when in addition exploration or drainage of the subhepatic space may be required.

#### *Left-Sided Abscess.*

Left-sided abscess is associated with transposition of the viscera.

#### *Residual Abscess.*

Fortunately the residual type of abscess is not very common. It results from contamination, unsuccessful drainage or a localized collection occurring in one area of the general peritoneal cavity. If the inner end of a tube comes in contact with the posterior abdominal wall or the floor of the pelvis, blockage results. When it is placed in the pelvis, it must have at least one lateral opening. The tube is brought out in a direct line by the shortest route. Gravity is the ideal in drainage, but intraabdominal pressure is a quite efficient force.

After removal, especially from the right renal pouch or the pelvis, drainage tubes are immediately replaced by a single long strip of gauze one and a quarter centimetres (half an inch) wide passed along the track by means of a long probe, the inner end being introduced to the kidney pouch or the pouch of Douglas as the case may be and renewed daily. This may be done for a week, often for ten days or longer. It is especially valuable when the pelvis has been drained by a suprapubic tube in general peritonitis. The tube may or may not act efficiently as a drain and is removed in forty-eight hours after which the gauze is introduced and changed daily. In two or three weeks there occurs at times a sharp attack of pain in the lower part of the abdomen with distension and elevation of temperature persisting until pus commences to pour away from the tube site. I have repeatedly observed this sequence of events which means that the gauze

will, by keeping the drainage track open, enables a residual abscess to find its way to the surface.

A residual abscess which does not drain of its own accord through a tube site or by breaking through the wound, will require to be drained in the ordinary way.

Occasionally an abscess which has been drained, will continue to discharge for weeks. A concretion may have been left behind or a pocket has not been drained or has been shut off and will need opening.

At times again, when the appendix has not been removed at an operation for abscess or a general peritonitis, the patient will improve for a few days and then rapidly go down hill. Either drainage is unsatisfactory or a new isolated abscess or pockets have formed which must be drained. The appendix is removed if the patient's condition permits.

#### *Ruptured Abscess.*

A perforated abscess constitutes a grave emergency and time must not be lost at operation as peritonitis will have ensued at a time when considerable toxic absorption has already taken place. The abdomen is opened over the mass if palpable, pus swabbed away and a tube inserted, preferably through the perforation, otherwise through a new opening made in the abscess wall. No attempt is made to remove the appendix unless this offers no difficulty. After removing an excess of pus from the pelvis by means of a wide strip of gauze, a second tube is placed in the pouch of Douglas and brought out above the pubes. In an adult female colpotomy will replace or supplement the suprapubic drain.

#### *Fistula.*

Fistula following operation is not common. It generally heals spontaneously and rarely needs operation for closure.

#### *Acute Appendicitis, and Intestinal Obstruction.*

Oschner has stated that preoperative obstruction is extremely rare. I have observed this condition in a moribund patient with enormous distension. Suprapubic drainage of the pelvis together with temporary enterostomy as advocated by Paul<sup>(4)</sup> would appear the only interference indicated in such a circumstance, local anaesthetic being used.

Drainage of an abscess will relieve an obstruction caused by kinking of bowel in its wall.

Post-operative obstruction may be due to newly formed bands and adhesions or residual abscess. The former two are divided and separated by operation, the latter drained.

However, it is more commonly established *pari passu* with the development of a general peritonitis and other measures failing, temporary enterostomy may be resorted to and a drain put in the pelvis if this has not already been done. In a limited experience I have found enterostomy disappointing. I am disinclined to resort to it until enemata, pituitrin and purgatives have persistently failed. If done earlier, the results may possibly be better. Of

course, bowel drainage is only one factor in combating the toxæmia. The extent and virulence of the peritoneal infection and the resistance of the patient are also to be considered. Costain's lymphaticostomy is interesting, but its value has yet to be fully proved.

#### Features Peculiar to the Female.

An abscess palpable *per vaginam* is best drained through a posterior colpotomy, its cavity and any part of the pouch of Douglas below it lightly packed with wide gauze strip one end of which is left in the vagina. Commencing about the sixth day a few centimetres of gauze are removed daily until in two weeks it is all away.

Colpotomy and light gauze packing are also valuable as a supplementary drain in general peritonitis. The removal of the gauze is then commenced earlier. It does not entirely replace the suprapubic tube, as the latter will drain the vesical pouches in front of the broad ligament.

The Fallopian tube may become so infected by a pelvic appendix as to require removal.

Acute appendiceal conditions occurring during pregnancy call for immediate operation and the simplest effective measures are adopted.

#### References.

<sup>(1)</sup> G. G. Davis: "A Transverse Incision for the Removal of the Appendix," *Annals of Surgery*, 1906, Volume XLIII, page 106.

<sup>(2)</sup> A. E. Rockey: "Transverse Incision and Dependent Drainage in Appendicitis," *Annals of Surgery*, 1924, Volume LXXIX, page 740.

<sup>(3)</sup> R. P. Rowlands and P. Turner: "The Operations of Surgery," Seventh Edition, 1927, Volume 2, pages 341, 403.

<sup>(4)</sup> C. Nather and E. W. A. Ochsner: "Retroperitoneal Operation for Subphrenic Abscess; with the Report of Two Cases," *Surgery, Gynecology and Obstetrics*, 1923, Volume XXXVII, page 665.

<sup>(5)</sup> J. F. Binnie: "Treatise on Regional Surgery," 1917, Volume II, page 252.

#### RESULTS OF INJECTION TREATMENT OF VARICOSE VEINS.

By L. CRIVELLI, M.D., B.S.,  
South Melbourne.

IN the treatment of a large number of persons for varicose veins (nearly 3,000 injections), I have found that the quinine and the salicylic acid solutions are equally satisfactory.

The process is apparently one of aseptic sclerosing endophlebitis. It is followed (the distinction is important) only by thrombosis; the clot is intimately adherent to the affected area, from which it has no tendency to spread. This reaction is a curative one, similar to that occurring in a ligatured vessel. The risk of embolism is consequently no greater. At any rate I have seen none and have seen none reported. From my experience I can assert that the operative treatment of varicose

veins should be soon obsolete except in rare and special cases.

#### Effects.

The effects of the injection on the blood according to the action of the solutions employed is (*in vitro*) anticoagulant (R. Bazelis). On the vein, Jentzer has shown that the solution both in the human subject and in animals infiltrates all the coats of the vein, through the lymphatics and *vasa vasorum* and this is followed by rupture of the elastic fibres. Bazelis has removed portion of injected veins in the human subject and found them reduced in size, hard and cord like without any clot. This forms later.

Twenty-four hours after injection the endothelium is thickened, some of the cells hanging in the lumen. There are no leucocytes and no clot. After forty-eight hours the vein is smaller, the endothelial cells are large and increased in number and covered with fibrin deposits, partly organized. Three days later the vein has shrunk. The endothelium has greatly proliferated and penetrates a clot which obliterates the lumen, to which it is firmly fixed by fibrin deposits. Eight days later the clot is strongly organized by granulation tissue. The muscular and other coats have disappeared in the connective tissue and the *vasa vasorum* have increased. The organization proceeds during the following fifteen days. At the end of three months the vein is reduced to a fibrous cord with a few muscular fibres.

A certain amount of infiltration occurs around the vein which some patients ignore and others find painful.

Skin troubles (pruritus and pigmentation) and ulcers are improved. In two patients hair grew along the tracks of the veins. The circulation of the limb is decidedly improved and the tendency to oedema and cramps is lost in many persons.

As a rule there is no effect on the patient, but some manifest varying degrees of reaction from a slight temporary vertigo to a severe rigor.

I divide the veins roughly into three classes: (i) Large prominent veins on otherwise normal legs, (ii) flabby, sunken veins on oedematous legs, (iii) small intradermal veins, usually too small to be injected.

The first kind is the most favourable and gives the best results. The second is covered with a very thin pellicle of skin, but on each side is bound by hard, almost cartilaginous walls. The vein is usually more obstinate, but benefits also by the treatment.

Advanced age (seventy years or even more), high blood pressure (200 millimetres of mercury or more), pregnancy, compensated heart lesions are not contraindications in my experience. The only one apart from renal disease, is oedema of the leg, which interferes with the injection.

Some Continental specialists report improvement in migraine and rheumatism after the salicylate injections. I have not so far had any results that could confirm this.



# THE SYMPATHETIC INNervation OF SKELETAL MUSCLE.

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AND

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THIS is a preliminary communication of some experiments which we have been carrying out to investigate the function of the sympathetic supply (if such exists) to skeletal muscle. The complete account of the experiments will shortly be published elsewhere. In this note we wish briefly to summarize our main conclusions.

Our results fall under two heads: (i) negative, where the work of other observers on the sympathetic and muscle tone has not been corroborated and (ii) positive, in that we have found what appears to be evidence of a function of the sympathetic in relation to skeletal muscle, for example certain fatigue phenomena. That there is an extensive supply of sympathetic fibres to skeletal muscle has been evident during the last twenty years. From the numerous investigations of this question there has emerged the fact (Boeke) that in the ocular, tongue and intercostal muscles probably every fibre has a double nerve supply, spinal and sympathetic. Sympathetic endings are found also in limb muscles, but on account of the technical difficulties involved the extent of the double innervation in this region is unknown. It was suggested in 1904 by Mosso and the theory has subsequently been upheld by De Boer, Langelaan, Hunter and Royle and recently by Kuntz and Kerper in America that the sympathetic fibres subserve muscle tone. The theory has been severely criticized by several investigators, but the success of Royle's operation of ramisectomy for spastic paralysis in man coupled with the experiments of Hunter in birds and the recent work of Kuntz and Kerper seem to provide some evidence for the validity of the theory. Our object has been to investigate this evidence and where we have been unable to confirm it, to determine what function the sympathetic has in relation to striated muscle.

## The Sympathetic and Tetanus Rigor.

Tetanus rigor is characterized by a profound hypertonus, non-fatiguability, absence of muscle sounds and is unaccompanied by excessive metabolism. We find experimentally that the condition is unaffected by the removal of the lumbar sympathetic chain (in five dogs). After the sympathetic trunk from the diaphragm to the pelvis has been removed and tetanus toxin injected profound hypertonus persists in the limb deprived of its supposed sympathetic supply.

## Brake Phenomenon.

Kuntz and Kerper maintain that the sympathetic system subserves the peculiar brake mechanism of muscle; the experiments consist in determining the extensor tension of the normal and operated legs. Contrary to these observers we find that the removal of the abdominal sympathetic trunk in the dog has no effect on the mechanism.

## Clinical Findings in Sympathectomized Goats.

Contrary to Royle we find that removal of the left abdominal sympathetic trunk in the goat (eight animals) does not affect the posture of the limb, the knee jerks (see tracings) or the tension of the *tendo Achillis*. In fact the only difference that can be detected between the two hind limbs after long periods (six months) is a slight softening and flabbiness of the muscles on the operated leg.

## Decerebrate Rigidity.

Decerebrate rigidity has not been investigated by us for the following reasons: All other observers, using dogs or cats, find that the condition is unaffected by sympathectomy. Hunter reported that typical lengthening and shortening reactions may be obtained if sympathectomy and decerebration are performed on the same day. It is only after a considerable period that rigidity fails to supervene in the sympathectomized limb. Hunter's interpretation that decerebrate rigidity is

a reflex subserved through the sympathetic arc cannot therefore be maintained; possibly the effect may be correlated with the softening of the muscles above referred to and with the fatigue phenomena which will be described below.

## Experiments on Birds.

Hunter's experiments on birds cannot be

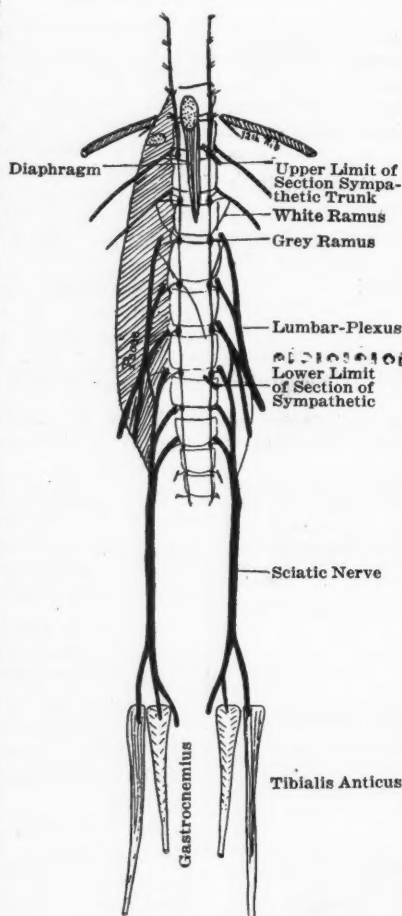


FIGURE I.  
Diagram to illustrate the Portion of the Abdominal Sympathetic Trunk Removed in Goats and Dogs.

corroborated. Our results are as follows: Cutting the sympathetic fibres to the wing of a bird (fowl, pigeon) does not produce a droop in the wing. Slight injury to a spinal nerve would produce the droop. Cutting the posterior root at the first thoracic level does not affect the posture of the limb. A completely deafferented wing does not exhibit the lengthening and shortening reaction, but the effect which Hunter described is due to the fact that the wing is drawn against the bird's side and the small amount of tone in the wing is insufficient to overcome the resistance of the feathers. Since the bird is unaware of the position of the desensitized wing, it makes no effort to restore it.

Contrary to Hunter, we find that subsequent removal of the sympathetic supply to the wing does not alter the reaction.

#### Experimental Evidence which Suggests a Sympathetic Supply to Striated Muscle.

Several goats were deprived of the lumbar sympathetic chain in the following way: By a lumbar incision the left abdominal sympathetic trunk was exposed and the first lumbar ganglion located. This was destroyed and the trunk distal to it lifted into the wound. The rami, both white and grey, connecting it with the spinal nerves, were then cut with scissors. Avulsion was avoided in order to spare the spinal nerves the slightest injury. When the last lumbar ganglion was reached, the sympathetic cord was cut across. Thus, the lumbar sympathetic trunk was completely removed and, since white rami are not present below the fourth lumbar ganglion, the left lower limb was deprived of preganglionic sympathetic nerves. The limb, however, retained its post ganglionic and its sympathetic connexions through the periarterial plexuses. The animals were investi-

gated clinically many times during the following six to nine months and the only difference detected in the muscles of the two limbs was a slight flabbiness in the extensors and flexors of the operated side. Knee jerk tracings failed to show the results which Royle claims in these cases. In fact no essential difference was demonstrated (see Figure II).

The following experiments on the fatiguability of the muscles of the sympathectomized leg were then carried out.

The tendon of the selected muscles (in some the *gastrocnemii*, in others the *tibiales anteriores*) were severed from their bony connexions and fixed by wire to levers recording on smoked paper on a revolving drum. The nerves to these muscles were exposed and the sciatic nerve clamped proximally. After section of all the branches of the sciatic except that to the appropriate muscle, the sciatic nerve was stimulated on each side by short tetanic shocks from the same induction coil. The tracings in all cases showed a much earlier fatigue of the left limb muscles. The contractions of the *gastrocnemius* or the *tibialis anterior* on the left side were at first vigorous and almost equal to those of the right, but the left muscle rapidly tired and soon ceased to contract while the right one continued at a fatigue level. After a few minutes' rest both right and left muscles contracted well, but the left again tired much more rapidly than the right (see Figure III, curves 1 and 2).

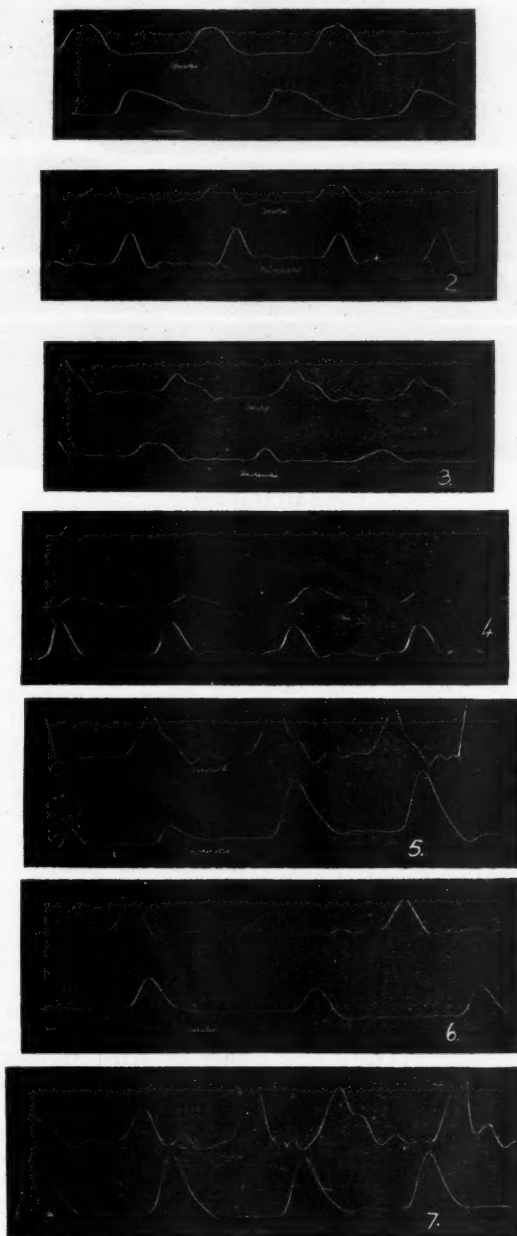


FIGURE II.  
Knee jerk tracings of animals subjected to left abdominal sympathectomy.

experiment was repeated, but before stimulating the femoral artery was ligated on both sides. The left muscle fatigued rapidly while the right contracted well.

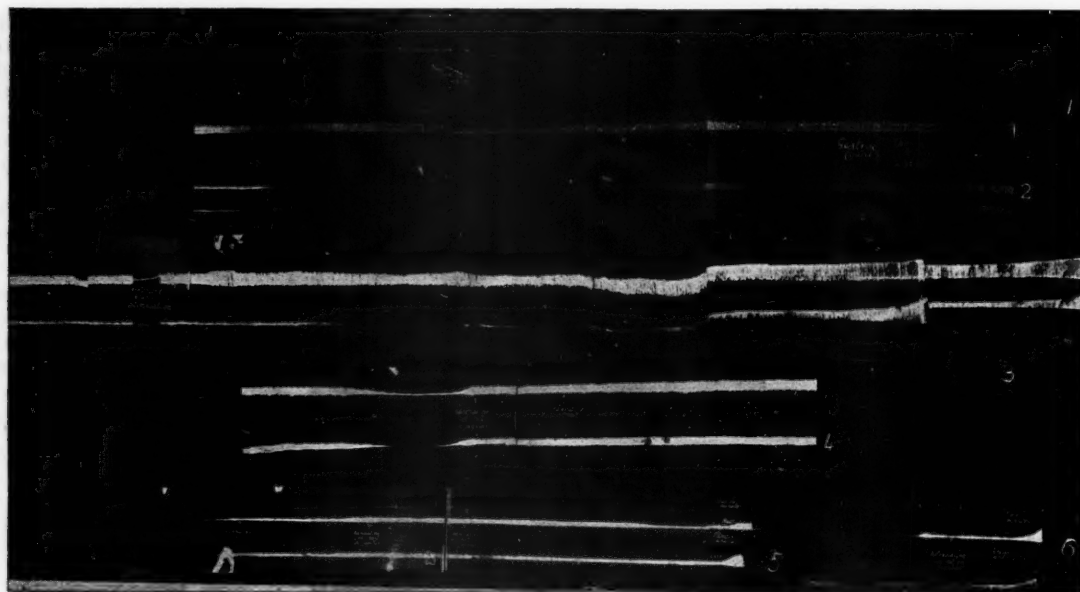


FIGURE III (1, 2 and 3).

Tracings showing the more rapid fatigue of muscles in the left lower limb in animals deprived of the left sympathetic trunk.

FIGURE IV (4, 5 and 6).

Tracings illustrating the effects of adrenalin in muscles under conditions of fatigue.

The effect of adrenalin was then tried on a sympathectomized animal. After the operated leg had begun to fatigue, one cubic centimetre of 0.01% adrenalin was injected into the jugular vein. A slight increase in contractions occurred in both the left and right muscles, to be followed immediately by a decrease, then gradually an increase again. Presumably the adrenalin acted at first on the muscle directly and thus increased the contractions, later exerting its constricting effect on the vessels which lasted a short time and as it disappeared the action on muscle became apparent once more. Curve 3 in Figure III illustrates that point. In one animal the sympathetic trunk was cut just proximal to the last white ramus, thus partially depriving the muscle of any supply it may derive from that source. The left lower limb here fatigued slightly more rapidly than the right, but the difference was barely appreciable (see Figure IV, curve 4).

The sympathectomized dogs showed the same results as the goats. As a control a goat with intact sympathetic system was tested by the same method and no difference in the fatiguability was noted (see Figure IV, curve 5).

In all the animals the same result was obtained, that is when the lumbar sympathetic trunk was removed, there was a more rapid fatigue of the muscle in that lower limb.

The affected muscles were weighed and compared with those on the unoperated side. No alterations in weight had occurred as the result of removal of the sympathetic several months previously.

Histological section of the muscles failed to reveal any change in the fibres themselves or in

the amount of fibrous tissue present. No wasting could be demonstrated.

From these experiments we conclude:

1. There is probably a sympathetic supply to striated muscles of the limbs *via* the white rami, sympathetic trunk, grey rami and peripheral nerves and this system is probably independent of the sympathetic fibres passing to muscle in the sheaths of arteries.

2. One of the functions of the sympathetic is to increase the ability of the muscle to withstand fatigue. Whether this is ultimately a vascular or metabolic effect is unknown.

The experiments with adrenalin indicate that the muscle is still sensitive to that drug in the absence of white rami connexions. This is in agreement with the work of Kellaway on the denervated iris. In the limb muscles there is still the possibility that it acted through the endings of the post-ganglionic fibres many of which must have been intact. The striking difference in the curves for the operated and the unoperated limb muscles shows that some influence is removed by severing the connexions of the sympathetic in the lumbar region.

These results agree with the observations of Gruber that adrenalin rejuvenates fatigued muscle and of Orbeli in Petrograd that stimulation of the abdominal sympathetic in the frog brings about a definite improvement in the contractions of fatigued bloodless muscle.

It would appear, in fact, that the sympathetic innervation of skeletal muscle is part of the great defensive resources of the animal which are of such extreme importance during severe physical exertion.



It may be that this fatiguability, together with the flaccidity we observed in the muscles of the sympathetomized limb, could account for some slight apparent improvement in human beings subjected to ramisectomy.

It is probable that we have here a method for further investigating the functions of the sympathetic system and the action of sympathetico-mimetic drugs.

We desire to express our gratitude to Professor W. A. Osborne and Professor H. A. Woodruff, of the Physiological and Veterinary Research Departments of the Melbourne University, in whose laboratories much of the work herein described was performed.

#### MIND HEALING.

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BEARING on present day matters of great importance, the topic of mind healing is of both practical and theoretical interest. Its history mirrors the growth of civilization, a fact sufficiently remarkable to serve as excuse for prefacing these observations with a retrospect before discussing modern methods.

It is possible to classify the various historical phases of mental healing as follows, though the dates are mere approximations.

#### I. POSSESSION BY DEMONS—THE BARBARIC ERA; ANTIQUITY TO B.C. 500.

The earliest conception of life was animistic, the soul a kind of vapour or film or shadow possessed the knowledge and activity of the body which it inhabited. It could manifest itself as ghost or phantom or dream capable of after-death existence and it was able to take possession of the mind of other men, animals or even things.

The recent findings of Tutankhamen's tomb give a vivid picture of this belief, in that his treasures and food were so placed in position that his spirit image might enjoy them during the long rest of death. The ancient Briton was buried together with his weapon, that he might defend himself in darkness as in life. The incident of the Gadarene swine and the entry by Furies into the spirit of Euripides are familiar examples.

Mental healing consisted in methods for ejection of these entering spirits.

#### II. RATIONALISM—THE ERA OF THE GREEKS AND ROMANS; B.C. 500 TO A.D. 700.

The birth of philosophy and science occurred in the great civilization of the Greeks and Romans. In the fifth century B.C. Hippocrates held that mental disease was purely and simply due to a derangement of the brain and could be ascribed to physical causes alone. "Men ought to know," he says, "that

from nothing else but the brain come joy, despondency and lamentation . . . and by the same organ we become mad and delirious and fears and terrors assail us, some by night and some by day . . . even the disease called 'sacred' [by which he meant epilepsy] arises from the same causes as the others."

The famous Roman physician Celsus is surely one of the founders of occupational therapy, since he prescribed occupation for his patients either by music or reading aloud.

Suitable diets and drugs were also suggested. In the third century A.D. Caeleus Auralianus was even more up to date. He insisted on soft bedding, a cheerful room, kindly and considerate attendants; theatrical entertainment, riding and walking were also recommended. An abundant diet and absence of physical coercion were further aids to treatment. A reference to the social difficulties accompanying mental disease is shown by Horace. After speaking of the peculiar conduct of a man pelting his own slaves upon whom he had spent money or of a man with a long beard playing baby houses, he states that in cases of madness the Roman proctor would interdict him and order the care of the patient to devolve upon his sane relatives.

It is impossible not to admire the insight of these old physicians who, armed with none of our instruments of precision, were yet able to grasp the fact that it is as natural to have a defective brain as a disease of any other organ. This was indeed the golden era of rationalism soon to be darkened by the sombre clouds of the Dark Ages.

#### III. THE DOCTRINE OF DEMONIAL POSSESSION—THE ERA OF REVENGE; A.D. 700-1700.

The night did not descend abruptly for in the twilight can be traced the gradual rebirth of superstition. The doctrine of possession by demons was rediscovered, remodelled to suit the belief of the times and finally reached such a degree of perfection as to form an ineradicable blot on the history of civilization.

In an old book of the ninth century A.D. entitled "Leechdoms, Wort-Cunning and Star-Craft of Early England" the fiend-sick man is advised to take henbane mixed with holy water and ale—surely a strange mixture. Later treatment was more drastic and reached its zenith in the fifteenth century when by the rack and other tortures, the human instruments of the Prince of Darkness, especially those who had the power to produce bad weather, were treated in thousands.

The reference to the climate reminds me that the strongest proof of the existence of evil spirits was found in the persistent way in which the church steeple was struck by lightning. The discovery of the lightning conductor by Franklin in 1752 sounded the death knell of demonology.

There has been preserved an account of the means taken to cast out a devil (Satan's pride must first be disgusted with blackguardism by the recital of the following):

Thou lustful and stupid one, thou lean sow, famine stricken and most impure, thou mangy beast, thou beast of all beasts, thou most greedy wolf, most abnormal whisperer, thou sooty spirit from Tartarus, I cast thee down, oh Tartarean boar, into the infernal Kitchen. Loathsome cobbler, dingy collier, filthy sow, perfidious boar, envious crocodile, malodorous drudge, wounded basilisk, rust-coloured asp, swollen toad, entangled spider, lousy swine-herd, lowest of the low.

This tirade being insufficient, the patient was confounded by meaningless and lengthy names, thuswise: "Acheron, Ehey, Schemamffphora, Tetragrammaton, Homooouision."

Later, they essayed to drive out the evil spirit with filthy and rank smelling drugs, asafoetida and the like, or mayhap, by burning a pinch of sulphur under the person's nose.

This was but the prelude to another series of exorcisms which, if unsuccessful, were succeeded by torture and possible death. Sir Theodore de Mayère, a court physician who settled in England in 1606, advised that in cases of melancholy humours, a course of emetics and purges should be followed by the letting of blood from the veins under the tongue. Later the head was to be blistered and shaved, the backbone being finally anointed with a choice unguent of earthworms and bats.

As one meanders through the centuries, many pharmacological products are encountered. Belladonna, or the insane root, was an ingredient much favoured by the witches in their potions. The mandrake was a plant of mystery; when torn from the ground it would utter groans of horror, which if heard would cause instant madness or even death. Truly the good old days had their boogies.

The Era of Revenge came to an end to be replaced by one of indifference.

#### IV. THE DUNGEON PERIOD—THE ERA OF INDIFFERENCE; A.D. 1700-1840.

It is characteristic of the pendulum that it swings from extreme to extreme. The shattering of the belief in demoniacal possession led to complete indifference as to the fate of the mentally afflicted. Humanity had shaped no policy, acknowledged no duty to those who were sick in mind. Their place was the gaol or some similar asylum where they could be kept decently out of sight.

The type of treatment meted out is well illustrated by reference to Bethlehem or Bedlam Hospital. For many years the place was one of the sights of London and could be seen for a penny piece. The nursing of this period was of the crudest order and has been likened to the school of Betsy Prigg. Some of you may remember how Mrs. Gamp told poor old Chuffey that he wanted a pitcher of cold water thrown over him to bring him round as was done by Betsy Prigg who nursed many lunacies. This rough and ready method was somewhat elaborated on the continent. Patients were terrified by the gradual ascent of water up a well in which they were chained, machines were devised in which a patient would suddenly be raised to the top of a tower and as suddenly lowered into a deep dark dungeon. One critic of this treatment remarked

that if he could be made to alight among snakes and serpents, so much the better. A favourite method of quieting an excited patient was to strap him to a chair which could be made to turn round at the rate of a hundred revolutions a minute.

The times slowly changed, however, and the declining years of the eighteenth century will always be notable for the growth of humanitarian principles in the treatment of the mentally afflicted.

#### V. THE HUMANITARIAN ERA.

Credit must be given to William Tuke who in 1792 founded the York Retreat, a place where the patients could be treated with all the kindness possible, a quiet haven in which the shattered barque might find the means of reparation or of safety. His was the first great experiment towards the modern conception and treatment of mental disease, the patients being treated as rational beings. The example was followed in 1795 by the great French alienist Pinel.

Further influences which had far reaching effects, were the writings of Connolly who freed the patients of Hanwell Asylum from all unnecessary restraint, the focussing of public opinion on the subject of mental disease by the treatment of George III, by the Willisises and the publication of such cases as that of James Norris who was fettered to a pole for nine long years, during which he was unable to move more than a foot in any direction.

Slowly the age of iron became the age of pharmacy, ushering in the humanitarian era. The change can hardly be better illustrated than by contrasting a hospital ward of 1855 with one of a few years earlier. The rooms are now well furnished and comfortable. It is recognized that society must treat even mental invalids with decency and justice.

Although the advance on the scientific side has been hardly commensurate, Bayle's description of general paralysis of the insane in 1822 illustrates the approach of the scientific era.

On the psychological side homage must be paid to the magnetizers who undoubtedly effected many cures and incidentally laid the foundations of modern psychology. Of these Mesmer was the most famous. He ushered his patient into a dimly lit hall whilst music was played. At the centre was a large oaken tub filled with water, iron filings and powdered glass. In silence the patients linked hands and to the ailing spots applied rods which issued from the tub. Presiding over the *séance* was the great magnetizer clad in a silken robe of pale lilac colour.

The "miraculous" cures at Lourdes and elsewhere helped to pave the way for the conception of psychological healing. Mention must be made of the amazing career of Mrs. Eddy, who borrowing the ideas of Phineas Parkhurst Quimby, founded the Church of Christian Science. Our profession had something to learn from this cult, though as Mark Twain says, it has its absurdities.

Pierre Janet, in his fascinating book "Psychological Healing" (to the pages of which I shall again refer) sees a direct connexion between these movements and those of medical moralization of whom

Paul Dubois, of Berne, is the high priest. Mental disease is due to erroneous ideas and patients are in error rather than in sickness.

As Emerson once said: "Hitch your wagon to a star; those who know how to do this can free themselves from many of the maladies of body and mind."

The termination of the century found descriptive psychiatry at its peak with the elaboration of such concepts as paranoia, manic depressive psychosis, hysteria and neurasthenia and the commencement of the study of psychological mechanisms. Since then, as Jelliffe and White infer, the growth of knowledge has been prodigious.

The present day trends and concepts of psychiatry had their beginnings in a larger knowledge of the nervous system, particularly of its development and of the functions of the vegetative neuro-muscular glandular apparatus in the growth of a genetic psychology (psychology of primitive man and the child); in the results of the study of borderline states (particularly the neuroses and psychoneuroses), in the growth of a behaviouristic psychology largely founded upon animal psychology; and finally in the use of the psycho-analytic schools.

In a word every mental illness is not to be regarded as a simple entity, but as a complex syndrome due to many factors in varying proportions, heredity, structural, endocrine, neuro-muscular, toxic, psychic and so forth. Inevitably this conception has far reaching results on treatment: It throws a greater strain on the physician, who can no longer place his patient in a few well defined pigeonholes for diagnosis and treatment, but must regard each case on its merits, assessing the involvement of each system in turn. The result, however, is well worth while.

I am sometimes asked if I practise both neurology and psychotherapy. The answer is in the affirmative. Every person with a mental disorder, however trivial, neurasthenias and psychasthenias and hysterias included, should be first approached from the neurological and structural standpoint.

Can these symptoms, fears, phobias and sensations be produced or aggravated by a lesion in any viscus, heart, lungs, kidney, intestines with special reference to toxæmia and focal infection? Can they be produced by a nerve lesion, such as disseminated sclerosis, cerebral tumour, *tabes dorsalis*, general paralysis of the insane or cerebral syphilis? Can they be associated with endocrine disorder, thyroid, parathyroid, pituitary, adrenal, or gonadal dysfunction?

It must be conceded that without more than a nodding acquaintanceship with neurology, these questions cannot be answered satisfactorily.

Neglect often results in error and not infrequently one sees patients sent to a State mental hospital instead of to a general hospital or become confirmed invalids for want of a neurological overhaul.

As already implied, it is much easier to treat everything as functional until failure to cure suggests the organic lesion, but it is hardly fair to the patient who loses valuable time and money in the process. Also failure to understand the physical

make-up limits very materially the scope of whatever form of psychotherapy is employed.

Occasionally, even in this year of grace 1927, an opinion is expressed that for a general practitioner to send a patient to an alienist is useless, because he, too, can only talk. But to send a patient with appendicitis to the nearest butcher, because he uses the knife more frequently than the surgeon, would be equally reasonable. It must be recognized that the use of word symbols is often more difficult than that of cold steel and it is not the words themselves but their arrangement that really matters.

The first stage of psychotherapy consists in the case investigation. My own procedure is to obtain a full recital of symptoms, so that the patient is convinced that the doctor knows the whole tale of woe. This usually takes skilled questioning as they are often loath to discuss their real worries. Fear of insanity is common, suicidal or homicidal impulses, masturbation or homosexuality are not infrequent. Failure to elicit these will naturally prejudice recovery, since the patient realizes only too well their existence and they may form the basis of or the clue to the root of an important conflict.

Unfortunately the family physician is often misinformed because the patient is afraid he will tell the relatives. Also, with the patient's very common fear of becoming insane, he (the family physician) is not regarded as a specialist in lunacy and assurance to the contrary therefore carries less weight than it might.

In all cases, therefore, in which symptoms such as nervousness, anxiety, headaches, fears and phobias are becoming chronic, a second opinion should be sought. On the lowest level of expediency it is well that the suggestion should come from the patient's own attendant and as I shall show later, the inability to cure is no reflection on his conduct of the case.

The family history gives the hereditary factor and an account of the previous health will enable us to acquaint ourselves with constitutional trends, estimations which are peculiarly vital in prognosis.

An attempt is made to gauge the point of view towards life in general, games, ambition, problems, in order to assess the behaviour reaction in varying situations.

In the mechanism of character formation it is well to learn the difference between extroversion and introversion. The energies are turned to the external world in the former, within his own personality in the latter. It is the difference between the busy-body and the recluse. As James says, the one is tough, the other tender.

The extroverts tend to project their interest to the outside world. With rebuff it turns to hate and a sense of quite unjustified persecution. As Edmund remarks in King Lear:

My father compounded with my mother under the dragon's tail and my nativity was under *Ursa major*; so that it follows, I am rough and lecherous. I should have



been that I am, had the maidenliest Star in the firmament twinkled on my bastardising.

The extrovert becomes the paranoic, whereas the introvert is more liable to develop *dementia præcox* trends.

We must decide if the individual is behaving in a particular manner because of a conscious or unconscious organ inferiority which necessitates compensation. The example of little men walking straight, tall men stooping, handsome men being superficial, are cited in this connexion.

A frequent finding is some conflict by which is meant the warring of one or two or more sets of ideas. Although White states, truly enough, "Conflict is at the very root and source of life, it is the very stuff out of which life is made and the necessary pre-condition of progress," it is the stuff which causes much mental disorder. All are familiar with the struggle between the "instinct of self-preservation" and the "sentiment of duty" which lead to so many war neuroses. In civil life the themes are less clear-cut, but the causes for disharmony are certainly present.

Lack of sex gratification, marital differences, family disputes, work difficulties, financial problems *et cetera* are prime factors in many neuroses. Their existence as indicated above must be disclosed before treatment can commence.

It is important to inquire as to the nature of the patient's dreams and his sleeping capacity. Signs of retardation in infancy or school life will suggest mental deficiency. Alternating or recurrent variations or mood will point to the onset of manic depressive psychosis.

Such an examination takes time, possibly more than one interview. Its completeness is a first essential to mental healing for three reasons. The first is that the form of psychotherapy adopted will depend on it; the second is, as already stated, that the patient must be persuaded that his condition is completely understood; the third is that the physician must establish an "affective" *rapproch* with the patient. This phenomenon, sometimes called transference, is particularly important in all suggestive treatment.

It may occur to the reader that this rather tedious investigation is an analysis of the psyche, in other words, a psychoanalysis. Whilst actually this is the case, it must be realized that psychoanalysis is as common as the probervial blackberry. Every time a patient is examined for breathlessness or a wife arranges a bridge party, psychoanalysis is employed, either to assess habits of self indulgence or the mutual compatibility of the guests. Psychoanalysis is ubiquitous. It is a thousand pities that in common parlance its use is apt to be restricted to the form invented by Freud for there are really five kinds: (i) The common form, used in situations requiring no special knowledge; (ii) an expert "conscious" form, dependent upon a knowledge of character formation and psychological mechanisms, the type of inquiry used in the above type of investigation of mental disorders. It is confined to the conscious level, except for the investiga-

tion of dreams, (iii) an expert subconscious form, of which the Freudian type is the best known. The patient lying on a comfortable couch relates his thoughts to the analyst. In an ordinary conversation these are woven into a continuous orderly stream; during an analysis they are encouraged to flow in all directions, for example, by free association, it matters not how apparently trivial, disconnected, futile, sensual or irrelevant they may seem. From time to time, the analyst whether from a study of a dream or as a result of his observations, may guide the stream of thought, but is careful not to suggest an answer. Gradually he becomes aware of the patient's subconscious trends, observes all emotional entanglements and relieves the tensions. As each session lasts an hour and they must be repeated daily for weeks or months, the difficulties are apparent. An analysis should only be undertaken by the experienced. In the method of Jung the patient gives his association to a set of words. Any hesitation, as shown by a stop-watch, or oddity of response points to the possibility of the particular word being associated with an emotional complex. The remaining kinds are (iv) the study of dreams and (v) the use of interrogation under light hypnosis or general anaesthesia.

#### TREATMENT. Physical.

Just as the first step in investigation is to exclude the organic, so the first step in treatment is to remedy the material factors. Although a recital of these would entail a recapitulation of general medicine, there are certain special features. Anæmia, whether primary or secondary, is not uncommon and necessitates the administration of iron. In spite of enormous research in endocrinology, thyreoid extract is still the most satisfactory endocrine product. Grades of hypothyreoidism are very frequent, particularly after the age of forty and small doses can be exhibited with benefit. Large doses up to 0.6 gramme or 0.9 gramme daily are sometimes given to melancholics whose condition is becoming chronic but there is danger of pulmonary tuberculosis subsequently occurring if pushed to excess. "Varium" and "Hormotone" can be usefully prescribed with thyreoid if diminution of the gonadal secretion is suspected. Although good results have been claimed for other gland products, with the exception of the parathyreoid and under special circumstances the pituitary and ovary, their value is doubtful. We await a fuller elucidation of hormone interaction and an effective method of gland transplantation.

The importance of focal sepsis is undoubted. Elimination of infected teeth, tonsils, adenoids and nasal suppuration is often a necessary preliminary to treatment. Toxæmia from the bowel calls for the frequent use of calomel and the enema. Intestinal antiseptics such as "Dimol" have been praised. The number of patients suffering from hypochlorhydria and the symptoms of an atonic stomach is surprising. The use of hydrochloric acid and the giving of dietetic advice is often most beneficial. General

visceroptosis may necessitate abdominal massage and a suitable belt. Cystitis and pyelitis are probably more important factors than are generally supposed. Whilst the use of vaccines in my own practice has been disappointing, they are undoubtedly useful upon occasion. They may be used for their alternative effect for chronic conditions.

The exhibition of sedatives is dealt with under the heading "Suggestion."

Concerning general paralysis of the insane, the malarial treatment has probably come to stay. The results are better than anything hitherto and every patient should have the chance of treatment by this method. Failing this I have seen promising intermissions after protein shock by the intravenous injection of *Bacillus typhosus* and *paratyphosus* and *Bacillus coli*.

#### Psychic (Psychotherapy).

It is important that, when the preliminary investigation is completed, a definite psychotherapeutic plan of campaign should be formulated and acted upon with complete confidence. The physician cannot afford to make trials. If in any doubt as to the efficacy of any treatment, he must cultivate the happy knack, though speaking dogmatically, of leaving a door open for possible retreat. The essential principle is variously known as diplomacy or strategy in other spheres of human endeavour.

The patient's mind is a delicate aneroid which registers every degree of the attendant's optimism or pessimism. To satisfy this trait is in itself a strain and makes a good bedside manner a desideratum.

It may be helpful to say a few words about the various special methods of psychotherapy, though in practice a combination is usually employed.

#### Suggestion.

The first mode of psychic treatment to be described is suggestion, which consists in the implantation and assimilation of an idea into the patient's mind without logical cause. The phenomenon is so ubiquitous and common that it has been raised by McDougall to the level of an instinct. It is the handmaiden of the physician; though he often denies the possibility that it has any similarity to the methods employed by the surgeon or to an ingredient of most bottles of medicine, it is a part of all physiotherapy and its use is almost universal.

It must, however, be conceded that people vary greatly in their suggestibility, both from person to person and from time to time. While the reasons for this variability are somewhat technical, the relation to emotion must be remembered.

Suggestion is seen to best advantage amidst the emotional excitement of the mob, a fact suggesting the possibility of an artificial concentration of its activity by creating the correct emotional atmosphere and massed effects. It is reproduced by the establishment of the *rapport* already mentioned, the thorough examination and the authoritative attitude of the physician to each detail of treatment. The technique of suggestion is comparable to that of asepsis in surgery, both microbes and ideas are infectious and every harmful germ must be kept

from the patient. Such words or expressions as "trying," "hope for an improvement," "endeavour," "let me know the result," must be rigorously excluded from the vocabulary. This is no easy matter unhappily. Every failure in suggestive treatment automatically loads the dice against recovery. The possibility varies inversely to the number of treatments attempted, a fact well recognized by psychotherapists who, if they are not successful in a reasonable space of time, have no qualms in sending the patient elsewhere in the knowledge that it is quite possible their successor may succeed at the first attempt. On the grounds of expediency a patient with a chronic curable disease is a poor advertisement.

The actual suggestions must not be fantastic. The promise of relieving the vascular system in a cardiac neurosis, for example, by relining its walls might be an obvious means of cure, but would almost certainly fail.

Suggestion, if not the twin sister of truth, should be a close relation, though cruder methods may be useful for the credulous. The importance of the complete preliminary examination may again be stressed. It is futile to suggest that all neurasthenic pains will be banished in the presence of physical conditions such as an organic dyspepsia, visceroptosis, errors of refraction, diseases of nasopharynx, failure of compensation and the like.

Often a patient is more impressed by an indirect than a direct suggestion. As in a theatre, the asides are most telling. A *sotto voce* "good," "excellent" is accepted as gospel because it is considered to be disinterested and therefore truthful.

Of the special modes of giving suggestion, hypnosis is sometimes a useful auxiliary, but it has limitations. Janet in handling 3,500 patients records only 7% of successes from this method. Hysterics and drug addicts are the best subjects. In regard to hypnosis most observers now agree that the light hypnotic state is quite efficacious.

The technique is simple, the patient lying on a comfortable couch in a quiet, dimly lighted room and is made to strain the powers of accommodation by looking at a mirror or the hypnotist's eyes, during which period suggestions as to sleep are made. When the eyes close, the therapeutic suggestions are repeated several times.

The value of massage in inculcating habits of physical and mental relaxation is often enormous. In addition it is a potent mass of suggestion and can be combined with the use of electricity in one or other of its forms. For children the use of the actual sleep state has been advocated, but its usefulness is very limited.

Medicine is not to be despised as an auxiliary. In mental disorders there is usually a great tolerance to hypnotics and the dose must be correspondingly large. Whilst in insomnia there is always the possibility of drug addiction, the use of paraldehyde, "Trional," "Medinal" or other preparations may be necessary to break the habit of sleeplessness. The patient goes to bed in expectation of a sleepless night, with the inevitable fulfilment as a

result of this autosuggestion. "Dial" 0.09 to 0.18 gramme (one and a half to three grains) or "Medinal" (sodium-veronal) 0.42 to 0.6 gramme (seven to ten grains) may be given to those who have difficulty in procuring sleep. "Trional" 0.6 to 1.3 gramme (ten to twenty grains) is useful for the light sleepers. Paraldehyde is the safest, but its obnoxious taste limits its usefulness. Although the subject of sedatives is controversial, their employment to dull the sharp edge of despair or excitement is often a necessity in practice. Sulphonal, chloral, opium and bromides, calcium and hyoscine "Luminal" and "Allonal" are most in favour. Paraldehyde and "Somnifen" may be used to produce a kind of prolonged twilight sleep in the acute psychoses.

#### *Persuasion.*

If two cards on which are written hieroglyphics were brought forward with the bald remark, "These are identical," the procedure would be one of suggestion. Were the identity of the whorls and figures explained at length, persuasion would be employed. The latter is an appeal to the intellect, the former chiefly to the emotions. The difference is subtle but real. To take another example, if a patient is told that he is "stronger," suggestion is employed, but if he is informed that on one day previously he walked ten yards, on the following fifteen yards and on the third day thirty yards, therefore he was stronger, the process is one of persuasion. The dynamometer can be usefully employed for this purpose, the strength of grip being measured periodically. In practice this principle is extremely useful. A detailed account of the symptoms at each interview is written down and any difference which betokens improvement is enlarged upon.

When the patient is intelligent, a knowledge of psychological mechanisms enables us to go into greater detail, understanding something of the nature of the unconscious and the genesis of his symptoms, a recurrence will be less likely to occur than if straightforward suggestion were used. The method is very generally applicable, but for the sake of clearness, its employment in an actual case of hysteria will be described.

A woman approaching the menopause came up for treatment on account of a habit of making loud sighing noises at frequent intervals. She was unable to leave her house since every one stared at her. By interrogation it was discovered that her symptoms had followed an unhappy love episode. After a preliminary talk about the unconscious, in which it was mentioned that many activities, such as walking, are automatic, the pendulum experiment was demonstrated. A small weight was suspended by a thread from the end of a stick. The patient held the latter in her hand and kept the weight over a card on which was drawn a circle intersected by two lines at right angles. It was found that if the subject of the experiment thought wholeheartedly about a particular line, automatically the weight or pendulum was swung

in that direction. It was then explained that this phenomenon showed how the muscles of the body including the larynx were controlled subconsciously. Then followed a description of several cases in which an emotional reaction had been found as the basis of an aphonia, paralysis, headaches and so on, which were cured through their owners' appreciation of the mechanism.

At this stage, it was pointed out that during our conversation, the sighing noises had already become less frequent and that by the mere realization of the process, without consciously striving to overcome the malady, there would be a great amelioration in the symptoms which would soon cease altogether. The prediction was fulfilled.

Should this method be employed, it is essential to give oneself an uninterrupted session of an hour or an hour and a half. A repetition, if necessary, should take place on the following day. This proviso is perhaps not so essential in cases of neurasthenia in which the symptoms are subjective (as in hysterics with paralysis). It forms a convenient method of approach towards the treatment of stammerers before commencing reeducation.

The technique must vary with the type of case in which it is employed and can be adapted to practically all, though success is naturally more easily attained in those who possess insight and the wish to cooperate.

#### *Side Tracking.*

It is obvious that consciousness is fixed within narrow limits, so that at each moment only a certain number of thought are possible. To take a concrete example, a patient who is intent on raffia working or embroidery or any other occupation, must inevitably keep her attention fixed on the task to the exclusion of morbid thoughts.

The vicious circle of introspection tends to be broken, fresh interests are aroused and the mind energy glides into saner channels. Occupational therapy is daily becoming a more important adjunct to mental healing.

#### *Rest.*

One of the most consistent findings in the psychopath is undue fatiguability. To use a simile, they are like eight-day clocks which run down in less than a week after winding. Mental tension and force are low, therefore the reserves are rapidly squandered if the stimulus is intense. Economy is essential and as Janet truly says: "In days to come the problem of psychological expenditure, the problem of the mental cost of activity, will be one of the cardinal problems of psychology and psychiatry."

The Weir Mitchell treatment by complete rest is known to everyone. Though his method has since been adversely criticized, for many patients absolute or even comparative rest is most beneficial. Less work, a better allocation of duties, a holiday, hired help, regulated hours, an occasional period for repose may be prescribed with advantage. Their use, however, must not be indiscriminate; inaction, as in the case of the elderly man who retires from business, is sometimes harmful. Often the rest pre-



scribed, such as a holiday, entailing the reorganization of the household, travelling and inconvenience, are more fatiguing than the ordinary routine, thereby accounting for the disappointing results of the change. The modern idea that holiday and travel should be synonymous is an absurdity.

Concerning prophylaxis, the intense mental expenditure at puberty, college life with its examinations, approaching marriage, change of environment such as emigration or removal to another town, loss of relatives with break-up of the family circle, family disputes, necessitate careful management in the interest of psychic economy at these epochs.

#### Isolation.

It is unfortunate that the psychopath in company is usually a bad mixer. His trends lead him to social excesses which are ill understood by his friends. He becomes irritable, peculiar, fussy, lazy, untruthful, domineering, jealous or reticent. Each member of the family takes him in hand and by their tactless sermons increase the abnormality.

Only those who have had daily contact with such people, can understand the constant bickering and antagonism which arise. The scales against harmony are weighted since it is an achievement for a family of normals to live together in peace. How much more difficult is it for the subnormal?

Sometimes the disorder is contagious, several members of a group seem to be neuropathic; "*folie à deux*" is occasionally encountered. Isolation of the patients is advisable both for the patients and their relatives.

The comedy of the mother-in-law often ends in tragedy, and one is constantly meeting with neurasthenia directly induced by too much of the "in-laws." In such cases I advise the couple to change their address, moving to an entirely different locality, if possible.

The education of the family is often the most difficult problem in mental healing. The expression "save us from our friends" is often feelingly expressed *sotto voce* by the physician.

#### Psychoanalysis—"Mental Liquidation."

With that genius for description which is almost the prerogative of his countrymen, Pierre Janet calls his chapter on psychoanalysis treatment by mental liquidation.

When a man harassed by a sad memory tries to rid his mind of it by journeying to a far country, his trouble rides pillion with him. "All the famous moralists of old days drew attention to the way in which certain happenings would leave indelible and distressing memories to which the sufferer was continually returning and by which he was tormented by day and night." This brooding is characteristic of the neuropath and several methods have been evolved to restore tranquillity. Janet himself restored the traumatic memory and effaced the symptom by hypnosis.

A woman suffering from inertia and amnesia, had suddenly passed into a neuropathic state after a "practical joker" had shouted into her ear that her

husband was dead. She was cured by restoration of the memory. Often the memories are connected with incest, seduction, immorality or indeed any situation which has an emotional tinge. Usually they are not very deeply buried in the unconscious, so that a psychoanalysis at the conscious level, aided by a study of dreams, can unearth them. I may refer to an actual experience. A woman of twenty-three suffered from intense headaches for which no organic basis was discovered. Some time previously she had lost her old employer, to whom she was greatly attached. He had himself suffered from headaches. About the same period his absence from duty had caused additional strain and worry to the patient. There was a rapid amelioration of symptoms after the mechanism was understood.

Freud and his school claim that sexual traumata occurring at an early age form the basis of most mental disorders and that a painstaking analysis is calculated to unearth the process, however deeply buried. Space does not permit me to give an account of the Freudian controversy beyond remarking that whilst claims to its therapeutic efficiency have been overestimated, as a medium for research its results have undoubtedly been most useful. The Freudian case *in toto* is still not proven.

#### Education—Reeducation.

At first sight the procedure adopted in persuasion might be thought to be identical with education. The difference lies in the fact that whereas persuasion is used to heighten suggestion, in education we are inculcating new habits of thought and movement by repetition, a method used daily in our schools.

By suitable exercises even a hopelessly atactic tabetic can be made to walk with some confidence. For stammerers, practice in correct phonation and respiratory coordination is a satisfactory mode of treatment. Exercises in immobility and muscular movement are invaluable for the *ticquers*. Contrary to a generally accepted belief, I have had some success in writer's cramp by reeducation in caligraphy. The method can be applied to hysterical paralysis and for the relief of such symptoms as vomiting and anorexia. I have seen a woman who had for a prolonged period reduced her diet to three pieces of bread and butter *per diem*, take full rations after a week's education.

It is applicable to such intangible entities as morbid timidity, loss of sexual power and notions of incapacity to work.

R. C. Cabot in her "Work Cure" states that the patient must use mental work as a means of cure. The patient must learn to work, to throw off his worries whilst working; let him learn to give full attention after complete relaxation and to learn how to stop work. He must know how to shut up his mind as if he were turning off a gas tap after a certain period of work.

#### Treatment by Excitation.

Janet describes under the heading of treatment by excitation methods linked "by their tendency to

induce personal effort rather than to arouse automatism, to encourage activity rather than rest, to favour social life rather than isolation."

Methods of cure along these lines have been numerous. Bremond is said to have stated that: "If you cannot have an ideal, you can at least have a stimulating passion" and Sterne that: "It is better to do the most useless things in the world than to remain for a quarter of an hour without doing anything at all." . . . "Cultivate rare tulips, become an autograph collector, breed rabbits, be a fisherman, turn eggcups, cut out silhouettes for your children, hunt butterflies or collect postage stamps. The one thing that matters, is that you should have a passion for something."

Sometimes this treatment occurs accidentally; the interest of war work healed many neurasthenics. The stimulus of a bereavement, marriage and its attendant cares, motherhood, business, often change the point of view and aid recovery. The stimulating effect of a successful love affair is almost too well known to require mention, but rarely has it been so vividly expressed as by Janet's patient Pepita, who remarked that she was only well when man hunting: "I need a life in the midst of intrigues. . . . I cannot live a stuffy monotonous life; when I do, I feel as if I should go off my head."

It is the need for excitation as a relief from depression which is at the root of most drug taking. The discovery of relief by alcohol or cocaine or morphine is experienced and at the next period of sadness the hand flies to the same means of solace.

The artificial inducement of interest in our patients calls for the exercise of considerable ingenuity and each patient produces different problems. Whatever line is adopted, the growth must not be unduly hurried or forced. Since the psychopath is soon disheartened by failure, we must conspire for success. Above all there is a need for encouragement, more encouragement and yet more encouragement.

#### *Moral Guidance.*

The moral guidance of our patients may at first sight be considered outside of the scope of the physician, but in psychotherapeutics its utility is enormous. The neuropath is like a ship at sea, which possesses a defective rudder, an ill regulated head of steam and an indifferent navigator. No wonder that it frequently runs into dangers.

Usually the advice tendered by friends or relatives, though well meaning, is hopelessly biased and inadequate. The patient needs someone who understands not only the psychological make-up, but life in general, someone who is thorough, unhurried, charitable and sympathetic. This ideal directorship, though possibly unobtainable, must be the goal. It is surprising how little is needed in some cases and how varied are the situations leading to disharmony. I have seen the advice to go to a lawyer do more good than a year of treatment. The mere knowledge that he would have my evidence on his side against a charge of malingering has

sent a man to work after some years of idleness. A few brief lessons in philosophy have altered an invalid's depressed outlook to one of hopefulness.

We physicians are apt to regard physical health as all important, whereas it is secondary to happiness, thus giving us an excuse to dabble in moralization.

#### *Sensory Stimulation.*

Almost every practitioner has at one period of his life used electrical stimulation, for example, faradism for nervous disorders. The method has been largely discredited by the orthodox. Whatever benefit materialized is usually attributed to suggestion, but it is probable that sensory stimulation *per se* may give excellent results in certain selected conditions.

A.B. suffered from obsessions, doubts and aboulia. Treatment by the methods already described improved her considerably, but she was still unable to feel herself. "I am myself, yet not myself," she exclaimed. Faradism was then tried on the hands. "My hands," she exclaimed immediately, "feel looser and have more life." Stimulation was applied over the whole body and the improvement in her general nervous state was unmistakable.

At this juncture, having briefly traced the evolution of mental healing from antiquity to the present day, I have a fear that you will accuse me of lacking precision. It is as if a surgeon discoursing on an acute condition of the abdomen, failed to differentiate between the technique of an operation for a ruptured gastric ulcer and that for acute appendicitis. In a word, no definite rules have been laid down for the treatment of such entities as neurasthenia, psychasthenia, hysteria or the psychoses. The omission, however, is unavoidable. Recently a practitioner recited a string of symptoms from which one of his patients suffered and asked my opinion as to the correct method of treatment. The answer was that without a full inquiry into the psychophysical make-up it would be impossible to say. To use a simile, mental healing is comparable to rock climbing. The therapeutic foothold is irregular and often difficult to find. The routes are numerous, the main approach may be social, physical or psychic, dependent upon the precise combination of the factors concerned, their number adding to the difficulty. Finance is often the first stumbling block; to suggest the obvious remedy involving a stay in hospital or may be a lengthy psychoanalysis is to close the door on hope. It would be tantamount to the offer of a drink in paradise to a soul in purgatory. Only a few days ago a man, aged forty, came to my rooms complaining of homicidal and suicidal impulses which had caused him intense agony of mind. The symptoms dated from boyhood. It was obvious that prolonged treatment was imperative, yet he was forced to leave for the country the next afternoon. Suggestion and persuasion were the only possible means of helping him. It may be added that he was not certifiable.

Every practitioner realizes the social difficulties. A woman, nervous and full of morbid fears, is bene-

fitted greatly by persuasion, sedatives and other methods. She returns to her family, quarrels with her husband and her symptoms return. The truth is that the couple are quite ill-matched and as long as they remain together, psychotherapy will have restrictions.

An hysteric lives with a doting family who daily makes ill-advised suggestions; the rational treatment should include reeducation of the family. A hard working mother suffers from an anxiety neurosis, she cannot afford hospital treatment and must therefore be treated at home. Every night she is awakened by her offspring and during the day they are constantly at her heels. The need for a residential psychological clinic is keenly felt in such a case. This suggests the question of the time factor. As mental disorder arises as a mal-adjustment in various directions, usually over long periods, morbid primary and secondary habits are formed. Whatever mode of treatment is adopted, their eradication may take a considerable time. The patient, the family and the physician must be schooled in the art of patience.

As I have already indicated, it is daily becoming better recognized that a hard and fast classification of mental disorder is an impossibility. The diseases pass imperceptibly from one to another and it is not uncommon to be able to demonstrate varying episodes in an individual patient. It is more correct to use the term syndrome than disease, with the proviso that the number of syndromes equals the number of patients.

While they may fall into certain common groupings, this does not permit the use of rule of thumb methods in treatment. Each must be treated on its merits and the only guides are those resulting from knowledge of the individual components, in other words, experience.

#### Summary.

1. An historical retrospect of mind healing is given.
2. Modern methods of mind healing are explained. The need for a full psychophysical survey of each patient is emphasized, in order to formulate a plan of campaign and acquire the necessary rapport. Psychotherapy is discussed under the headings suggestions and hypnosis, persuasion, side-tracking, rest, isolation, psychoanalysis, education, re-education, excitation, moral guidance, sensory stimulation.

#### Bibliography.

1. William McDougall: "Body and Mind."
2. Tuke Hack: "Dictionary of Psychological Medicine."
3. Sydenham Society: "The Genuine Works of Hippocrates."
4. A. J. Brock: "Galen and the Natural Faculties."
5. Sydenham Society Publication: "Paulus Agineta."
6. Batty Tuke: "History of the Insane in the British Isles."
7. A. D. White: "Warfare of Science with Theology."
8. E. G. O'Donoghue: "The Story of Bethlehem Hospital."
9. "Social Aspects of the Treatment of the Insane," Studies in History, Economics and Public Laws.

10. Pierre Janet: "Psychological Healing" (translated by Eden and Paul).

11. S. E. Jelliffe and W. A. White: "Diseases of the Nervous System."

12. W. A. White: "Mechanisms of Character Formation."

#### DYSFUNCTION IN SIMULTANEOUS POSTURING OF EYEBALLS.

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NORMAL vision follows the simultaneous impinging of the image of an object on correlated points in both retinae. Dysfunction of one or more of the *motor oculi* muscles may prevent physiologic posturing of the eyeballs, thus causing the image to impinge on points not correlated in both retinae, hence double vision (diplopia).

Many investigators, physiologists and clinicians, including Langley, Boeke, Pottinger, Fraser, Crile, Langer, Hunt, have directed attention to the anatomy and physiology of the para-autonomic and autonomic systems (sympathetic) and to dysfunction of these (see "The Sympathetic Nervous System in Disease," by Langdon Brown).

These systems may be divided according to their anatomic positions and to their functions. The para-autonomic system consists of ganglia in mid-brain, medulla, cervical, upper dorsal and pelvic regions and their "outflow." The autonomic system is composed of two chains of ganglia extending from atlas to coccyx, one on each side of vertebral column, and within the thoracic-abdominal cavities. The outflow reaches all the viscera within these cavities and also has direct communication with the spinal cord.

One function of the upper section of the para-autonomic system is to posture the eyeballs when rotated into position by the *motor oculi* muscles from impulses conveyed by the third, fourth and sixth cranial nerves. The outflow from the ganglia in this section of the para-autonomic system reaches the *motor oculi* muscles along efferent fibres that accompany the third, fourth and sixth cranial nerves and the internal carotid arteries, their arterioles and capillaries.

Another function of the autonomic systems (Langer) is that their efferent fibres convey two impulses, excitatory and inhibitory, and on the proper adjustment of these depends the physiologic functioning of the tissues and organs innervated by these nerve fibres. Should an excess of the excitatory impulses "get through," irritation, hyperæmia, excessive secretion, cramps, colic, spasms, elevation of temperature, one or more of these might follow. Any excess of the inhibitory impulses could produce loss of functional activity, anæmia, stasis, flaccidity of muscle tissue, diminished secretion, lower temperature.

The following case gave the writer an opportunity to test the theory that one function of the autonomic systems is to posture the muscles



(Ramsay Hunt), for example, to posture the eyeballs when rotated into position for normal vision. The prompt effects produced in this case seem to furnish some endorsement, at least, of the physiologic adjustment of the excitator and inhibitory impulses conveyed by the efferent autonomic nerve fibres (Langer).

The writer, in reporting the following case as endorsing the above theories, is standing by the "rôle" laid down by Emerson: "Stand by your own honest convictions with good natured inflexibility, the more so when the cry of voices is against you." Perhaps some of your Australian ophthalmologists (like some Toronto ones) will be tempted to say that his attitude is more like that of the traditional bull facing the engine, showing "great courage, but poor judgement."

#### Case Report.

The patient was a female in mid-life, robust, in a responsible business position. Some transitory disturbance of vision (diplopia) had occurred at longer or shorter intervals during adolescence. The attacks of diplopia became more frequent and of longer duration during the past four or five years. She consulted several competent ophthalmologists who told her that they could not find any disease of the eyes. She was referred for medical and gynecological examinations, but no morbid conditions were found that could be considered as a possible cause of a reflex trouble.

She came, at the request of another patient, to the office in February, 1926. She complained of the great disability caused by the diplopia and that she would be obliged to give up her position on account of it. The writer, not being an ophthalmologist, accepted her statement as given above, but noted the involuntary movements of the eyeballs. He directed special attention to ears, nose, throat, thorax, abdomen and pelvis, but found, as others, no functional or organic trouble that might be considered a factor in producing the diplopia.

Assuming that the diplopia was directly due to dysfunction of one or more of the para-autonomic ganglia and the outflow to the *motor oculi* muscles, diathermy was used. Diagrams in Pottinger's and Langdon Brown's books show efferent fibres (para-autonomic) passing upward to the ciliary ganglion from the superior thoracic and cervical ganglia. The first treatment was directed to the superior thoracic ganglia. An electrode (tin) 4-4 was applied to the upper part of the thorax; one in front and one at back and a current passed through; heat of tolerance, for twenty minutes. On the electrodes being removed she volunteered the statement: "Doctor! I can see better now, how is that?" She came daily, triweekly and weekly for two months and at longer intervals since, as the advent of the menopause in June caused some systemic disturbance. The electrodes were applied from time to time on the back and front of the cervical region, one on either parietal bone and on the forehead and occiput. She says that she has not had a single attack of diplopia or any disturbance of vision since the first treatment twenty-two months ago.

It may be asked why treatment was continued after eye trouble ceased. It was purely prophylactic, as after the advent of the menopause there was marked nervous disturbance from menorrhagia, flushes, headache *et cetera*.

The writer asked a very distinguished physiologist for his explanation as to the effects of diathermy in this case. He volunteered a statement somewhat as follows, that the heat dilated the arterioles and capillaries, thus furnishing a more abundant

supply of purer blood to the fatigued *motor oculi* muscles. This would enhance metabolism and help to restore the physiologic function of these muscles. However, it is in non-scientific parlance "up to" the ophthalmologists, out of their knowledge and experience, to accept or reject the theories on which the treatment of this case was based.

## Reviews.

### INFANT FEEDING.

It would be a mistake to judge "Feeding and the Nutritional Disorders of Infancy and Childhood," by Dr. Julius Hess, of Chicago, by its opening chapters.<sup>1</sup> Those on anatomy and physiology are very short and sketchy and might have been omitted. That on metabolism in infants is a lengthy collection of undigested facts, which might be memorized for an examination, but can serve no useful purpose. Certainly a reasoned and lucid discussion of such parts of our knowledge of infant metabolism as have a bearing on practice would be very difficult to write, but it would be valuable. A string of disconnected facts is not knowledge. The chapter on the intestinal flora is a good summary. There are good chapters on the vital question of breast feeding and a valuable account of the methods of artificial feeding favoured by the author. We are surprised to read that some mothers will be able to suckle their infants for only two or three months and that it is exceptional to find a breast milk supply which is sufficient for the infant after the ninth month; we strongly dissent from the advice to allow one bottle feeding daily by the end of the third or fourth month in order to relieve the mother. We cannot believe that American women are so different from those of other countries and suspect that their difficulties in breast feeding are social rather than physiological. Much use is made of wet nurses and it is interesting to learn that one of his very best gave milk containing 1.99% of proteins, although on another page the protein percentage of human milk is given as 1.25% and on yet another as from 1.0% to 1.5%. In artificial feeding with cow's milk the percentage system which originated in America, seems to have there gone mostly out of use. In this quarter of the globe we have clung more tenaciously to the percentages, but have partly abandoned the milk fats and substituted fats derived from fish livers, peanuts and other sources very far removed from the mammalian udder. Our author speaks of the superior digestibility of boiled milk over raw milk in no uncertain terms. He gives a liberal caloric allowance, but restricts the amount of cow's milk usually to ten cubic centimetres per hundred grammes body weight (one and a half fluid ounces per pound body weight) *per diem*, in a dilution of three parts to five, containing 2.4% of fat, with an addition of sixty-three centigrammes per hundred grammes (one-tenth of an ounce per pound) body weight of carbohydrate. Starch in the form of cereal flour is added at the third month. Raw egg yolk is a frequent addition. While not questioning his good results, this dietary scale for an infant between six and nine months appears to us too complicated for general use. Acidified milks, especially cultured lactic acid milk, are strongly recommended.

The latter half of the book contains good descriptions of the various nutritional disorders of early life, but we searched in vain for any notice of the most serious disorder in this part of the world, namely dysentery. We consider this book valuable and interesting to the expert, less so to the general practitioner and quite unsuited for the student, for whom it is too encyclopædic and not sufficiently lucid.

<sup>1</sup> "Feeding and the Nutritional Disorders in Infancy and Childhood," by Julius H. Hess, M.D.; Fifth Revised and Enlarged Edition; 1927. Philadelphia: F. A. Davis Company. Demy 8vo., pp. 580, with illustrations. Price: \$4.50 net.

## The Medical Journal of Australia

SATURDAY, FEBRUARY 4, 1928.

### A Retrospect.

#### Dermatology.

PROGRESS in any branch of medical science within a given span of time is necessarily a relative term. Under very rare conditions a great discovery is made that has an immediate effect on the whole human race. Discoveries of smaller importance are common and must occur many times in each year in every line of study provided that a large number of earnest workers are observing, experimenting, seeking for truth and recording the isolated facts and observed events as they arise. Progress is probably greater and more rapid when new data are published to the world after a prolonged and patient search unconnected with any direct application. From this standpoint the year 1927 has proved satisfactory in the realm of dermatology, for many workers have expended energy and applied ingenuity in endeavouring to gain a better understanding of some of the obscure problems connected with skin diseases.

One of the most important articles that have appeared is that of E. H. Molesworth on rodent ulcer. He has gathered his facts with perseverance and patience and has marshalled them in order before he ventured to piece them together into a complete story. He has adduced strong evidence in support of his contention that ionization by the ultra-violet component of sunlight is the predominant factor in the production of rodent ulcer and squamous epithelioma of the skin or of the lip. Both these conditions are preceded by a hypertrophic change in the epithelium, resulting in a prerodent keratosis or a coarser keratosis that forms the prelude to squamous epithelioma. Molesworth found that fair haired and fair skinned individuals who do not tan when exposed to sunlight, are liable to meet with disaster when the sun's rays are allowed to act for considerable periods on

the face and lips. His views have attracted much attention throughout the world.

Some interesting observations have been carried out in regard to the biochemistry of the blood and tissues in certain dermatoses and infections associated with skin manifestations. It has been generally accepted that the calcium content of the blood is lowered in urticaria and many other common skin affections. G. H. Percival and C. P. Stewart, as well as S. S. Greenbaum, have proved by exact analyses that this doctrine is not based on fact. It is true that when the general nutrition is reduced in the course of skin diseases, the calcium in the blood may be less than normal. This is not a result or part of the dermatosis. G. G. Campbell and J. F. Burgess have noted a disturbance of the carbohydrate metabolism in persons suffering from eczema and other forms of dermatitis. The sugar intolerance is not a manifestation of a diabetic state. Similarly it has been shown that the sugar metabolism is often disturbed in the course of a syphilitic infection. Some useful observations have been made on the hydrogen ion concentration and the urea content of the blood in persons suffering from inflammatory diseases of the skin. So far there is no evidence of any ætiological relationship between the biochemical changes and the skin affection. It would seem that the former are the result of the interference with the function of the skin.

The histopathology of skin affections is being closely studied and many advances have been registered during the year. The publication of an important book by Kyrle is an event worthy of recognition in this connexion.

J. W. Flynn has recorded the third case of *kératodermie blennorrhagique* in Australia and has given an excellent description of the histological changes. It is a very rare and curious condition.

#### Oto-Rhino-Laryngology.

The year 1927 has been a fruitful one in the realm of otology, rhinology and laryngology.

A great deal of work has been conducted in connexion with progressive deafness. Multiple testing of all members of the community, including children, has been advocated in America with the object of

detecting the early stages of the deafness. Lawrence and others have investigated the possible association of disturbances of the ductless glands with deafness. Barlow found in experimenting on rats that the bony labyrinth is not affected by a diet deficient in vitamins. V. O. Knudsen and I. H. Jones have subjected no less than one hundred and eighty-seven persons suffering from paracusis to careful tests. They found that these persons do not hear sounds better in the presence of extraneous noises than in their absence, but that their hearing is less disturbed by extraneous noise than is that of a normal person.

For deafness caused by chronic *otitis media* ionization and the application of various vapours through the Eustachian tube have been advocated. Barnett claims that much benefit is derived from this treatment. G. A. D. McArthur is more cautious concerning its value for otorrhoea, although he regards ionization as a useful adjunct to other forms of treatment. He calls attention to the unsatisfactory results obtained in children by the usual methods. A. R. Friel and F. H. B. Norrie have used ionization in the treatment of affections of the ear and nose and speak of successful results in *otitis media*, furunculosis of the ear and hypertrophic rhinitis. Radium is being used in Ireland for *otitis media* with apparent success.

Magnus, of Utrecht, as well as de Kleyn and Versteigh, has conducted extensive investigations into the physiology of the labyrinth and has published the results up to the present. Some interesting information has come from C. E. Benjamins on the technique adopted by him for the measurement of counter rolling of the human eye associated with otolithic reactions.

In connexion with the aetiology of the various forms of meningitis, J. C. Greenfield has studied the chemistry of the cerebro-spinal fluid. He found that the urea and glucose content is influenced by inflammatory changes, but that no difference occurs in the various forms of meningitis. On the other hand the inorganic salts are not changed in localized meningitis, while they are increased in generalized meningitis. He suggests that the chemical examination of the cerebro-spinal fluid is

of value in ascertaining the extent of the meningeal involvement and in determining the prognosis of the attack. Portmann, of Bordeaux, has described an operation for the relief of vertigo of labyrinthine origin. The *saccus endolymphaticus* is exposed below the lateral sinus and the fluid is drained from this site by paracentesis. Biehl, of Vienna, prefers to perforate the *feneſtra rotunda* through the cavity of the middle ear.

Deaf mutes have benefited greatly in learning to speak by the use of special apparatus. A sound diaphragm is held by each pupil. The diaphragms are connected with an electrical voice amplifier into which the instructor speaks. The pupils learn rapidly by touching the diaphragm in conjunction with lip reading.

In the realm of rhinology some advance has been made in the diagnosis of affections of the nasal sinuses by the injection of iodized oil combined with radiography. The information gained in the skiagram after these injections is exact and valuable. Physical agents, such as diathermy, radiant heat and light and ionization, have their champions in rhinology as in other branches of surgery. The majority appears to regard these agents as useful for their sedative effect in certain forms of mild, chronic and early acute inflammatory conditions. Few surgeons, however, permit these physical measures to supersede the ordinary surgical or medical procedures. J. B. Hogan has described an operation for the transantral drainage of the ethmoidal labyrinth. He considers this the safest and most effective way of dealing with the cells. C. A. Verge has advocated an external operation for ethmoiditis. Access is gained to the cells through the frontal sinus. At the second session of the Australasian Medical Congress several informative papers on neuro-otology, paranasal sinusitis, ethmoiditis, disease of the mastoid and vestibular reactions were contributed.

The most important work carried out in England on matters connected with laryngology has been conducted by Ballance and College. They grafted the phrenic nerve to the recurrent laryngeal nerve in persons affected with paralysis of the vocal cords. Their experimental work was done on apes and



dogs. The phrenic nerve was grafted on the cut recurrent laryngeal nerve and the *descendens noni* nerve was grafted on the divided phrenic nerve. The operation has been successful in two human beings. In both the diaphragmatic movements eventually returned to normal. Chevalier Jackson, J. Guisez and others have advocated the endoscopic examination of the air passages in chronic diseases of the lungs of obscure origin. Endoscopy has been widely used for instilling opaque oils into the lungs, notably "Lipiodol," prior to X ray examination. J. F. Mackeddle and R. Graham Brown have given clear accounts of the value of this procedure in thoracic conditions.

#### Urology.

Urologists have made some progress during the year 1927 in connexion with the diagnosis of diseases of the urinary organs. F. Leuguen has introduced a method of fluoroscopic inspection immediately after the injection into the pelvis of the kidney of a 30% solution of sodium iodide. The variations of the renal pelvis can thus be watched under normal and pathological conditions. A *bulbus ureteri* has been noted, analogous to the *bulbus duodeni*. It is held that pyeloscopy may prove of value in the study of the causation of renal pain and in the development of small, non-obstructive hydronephroses.

J. G. Gottlieb and F. J. Strokoff have devised a diagnostic method, pneumo-pyelography. The renal pelvis and, if required, the ureter are filled with air and a skiagram is taken. The injection of air is said to be less painful than the injection of fluids and the skiagrams are more definite.

Horseshoe kidney has claimed attention. J. A. Colston, W. W. Scott, D. N. Eisendrath and others have diagnosed this condition prior to operation. The pyelographic appearances have been defined.

In connexion with the renal efficiency tests, F. S. Crockett has reported that the excretion of phenolphthalein is delayed when magnesium sulphate is being taken by mouth at the same time. The delay is attributed to the presence of magnesium salt in the tissue fluids of the body. The delay can be obviated by the exhibition of calcium chloride without interfering with the cathartic action of the salt.

W. W. Haines and L. F. Millikin have found that deep ether anaesthesia lowers the output of urine and delays the excretion of dyes used in testing the efficiency of the kidneys. This effect is temporary. As far as these observers have been able to determine, the ether inflicts no damage on the renal tissues.

A. J. Blau claims that there is a vesical atony in children suffering from enuresis, but that in addition to this anatomical change or defect, there is a nervous element. He has treated the condition by oral and hypodermic administration of pituitrin with good results.

B. A. Thomas and J. C. Birdsall prefer puncture of the seminal vesicles with a needle to vasotomy for the injection of antiseptic fluids. They claim that there is less risk of producing stricture of the seminal vesicles. D. Watson reports excellent results from the use of fresh *Bacillus bulgaricus* cultures in gonorrhœa in the female. He applies "Acriflavine" to the cervix or urethra. He uses hollow probes for all applications in infections of the cervix to lessen the risk of infecting the cavity of the uterus.

O. S. Lowsley has introduced a new form of cystoscope for fulguration of the bladder tumours. The sheath is constructed of hard rubber, while the tip of the beak is of metal.

Chronic prostatitis has been studied by W. S. Pugh and W. von Lackum, both of whom have attempted to ascribe the infection to a distant focus of infection. J. Marion advocates operation for carcinoma of the prostate, even when the growth appears to be beyond the reach of surgery. He maintains that while cure is rare, life is considerably prolonged and suffering much reduced. The same observer in dealing with *prostatism sans prostate* has described the hypertrophy and hypertonicity of the internal sphincter muscle. He considers that the hypertrophy is congenital. He removes the whole of the sphincter muscle with the finger in his suprapubic operation. S. Harry Harris has given full details of his operation of prostatectomy and the results obtained at the Australasian

Medical Congress at Dunedin. An interesting discussion followed the reading of his paper. His operation is performed through a very small incision (about three centimetres) and is controlled throughout by direct vision. A special method is introduced for the closure of the cavity created by the removal of the prostate.

M. L. Boyd pleads for the early establishment of suprapubic drainage of the bladder in bladder paralysis of central nervous origin. The object is to prevent the development of the so-called "automatic bladder." By avoiding back pressure on the kidneys, the risk of infection of these organs is diminished.

W. J. Carson has investigated the anatomical relations of the pregnant uterus to the ureters. He has found that under normal conditions the pregnant uterus always causes dilatation of the right ureter as a result of direct pressure. The left ureter is dilated in about 75% of all pregnant women. He holds that the secondary congestion caused by this pressure explains the predisposition of the upper portions of the urinary system to infection in pregnancy.

#### Morbid Anatomy.

As in previous years the subject of pathology has been considered in this journal from several different aspects. Morbid anatomy is not a subject that can be confined in a watertight compartment. The morbid anatomist must be a physiologist; he must consider abnormal tissues from the biochemical point of view. The bearing of his subject on general or preventive medicine must also be taken into account. For example, though the mystery of the nature of malignant disease remains unsolved, mention should be made of a gathering of morbid anatomists from many nations, held at New York in September, 1926, under the auspices of the American Society for the Control of Cancer. The report of this meeting was published in May, 1927. It should really be considered under the caption of preventive medicine. The fundamental object of the meeting was the coordination of cancer research throughout the world and preliminary steps were taken towards the establishment of an international federation of societies for the control of cancer. It is hoped by

the founders of this federation that all papers published throughout the world on cancer will be abstracted and made available for all workers.

The subject of goitre was given the chief place at the second session of the Australasian Medical Congress (British Medical Association) at Dunedin. Reference has been made in another chapter to the excellent work of C. E. Hercus on the relationship between the occurrence of toxic goitre and the iodine content of the soil. A. M. Drennan has set up a connected conception of the pathology of the various forms of enlargement of the thyroid gland. He recognizes only two main phases, the resting, storing or colloid phase and the active, secretory or hyperplastic phase. He suggests that the thyroid is exposed to a deficient supply of iodine, either as a result of a diminished supply or of a restricted supply and an increased demand. Three responses are possible. The gland may increase in size so that the storage area for colloid with a lower iodine concentration than normal may be increased. If this does not take place, the deficiency may be compensated by partial hypertrophy and local hyperplasia. The third possibility is that the whole gland participates in the hyperplastic change which leads to an increased output of hormone, but no increase in storage. Drennan adduces evidence in support of his contention that thyroid adenomata are merely forms of nodular enlargement and that local hyperplasia leads to exhaustion of the gland and myxœdema. A. H. Tebbutt does not accept this view. He maintains that thyroid adenomata are true neoplasms and not phases of thyroid exhaustion. He has given a detailed account of the development of myxœdema and hypothyroidism which he regards as of the nature differing from one another merely in degree. He has also dealt with what he regards as true tumours of the gland, from simple growths, adenomata, simple carcinomata, Riedel's tumours, adeno-carcinomata, papillary adeno-carcinomata, squamous carcinomata and tumours such as parastrumata, post-branchial goitre and sarcomata. He has also classified the tumours of aberrant and accessory thyroid tissue. There are many points on which Drennan and Tebbutt agree and but a few on which they differ. Both have put forward new data and both have contributed to a

fuller and better understanding of the pathology of the disturbances and lesions of the gland.

C. H. Kellaway and other workers at the Walter and Eliza Hall Institute have given direct evidence of the possibility of ascending renal infections. The path is the lymphatic network of the ureter and not the blood stream.

A. Kolodny has made an important study of sarcomata of bone. His classification of primary malignant bone tumours into osteogenic sarcoma, Ewing's sarcoma, myeloma and a group of unclassified sarcomata, such as angio-endotheliomata and extraperiosteal sarcomata has not only led to a better understanding of these neoplasms, but has provided a basis for easier diagnosis.

Keith Inglis, H. R. Sear and F. Gordon Bell have also contributed valuable information on this subject and have put forward their views in regard to pathogenesis and classification.

R. Muir has made an extensive study of Paget's disease of the nipple. He has described findings to support his view that the disease begins as a primary intraduct carcinoma and that this becomes recognized as Paget's disease after the rupture of the ducts. Muir believes that the Paget cells are proliferating cells of the ducts that have invaded the deeper and softer layers of the epidermis.

J. R. Learmonth has made a study of the leptomeningiomata of the spinal cord. He has advanced arguments in favour of acceptance of the epiblastic origin of leptomeningiomata and although he admits that the work of Harvey and Burr on these tumours has not been confirmed, he attaches great importance to the findings of these observers.

The vexed question of the causation of pancreatitis has been investigated by both D. Chamberlain and M. Kaufmann. Finality has not been reached in this matter. Chamberlain holds to the view of lymphatic extension, while Kaufmann denies that this is possible. There seems to be no reason why the views of the one should be accepted necessarily to the exclusion of those of the other.

G. R. Cameron has found that in the guinea pig excision of part of the pancreas is probably followed by regeneration of acinar and islet tissue.

Regeneration is inhibited by giving "Insulin" and pituitary extract. Both "Insulin" and pituitrin cause hypertrophy of the pancreas and the latter causes an increase in the relative amount of islets.

I. Clunies Ross has made a study of tick paralysis. He has concluded that the symptoms are due to a toxin and that the poison acts on the motor neurones in the anterior horn of the spinal cord and on the nerve cells of the cranial nerve nuclei.

J. Burton Cleland has made two valuable contributions on the pathological lesions found in a series of one thousand consecutive *post mortem* examinations at the Adelaide Hospital. This method of study forms a useful basis for future observations and may be commended to the pathologists of other metropolitan hospitals in the Commonwealth.

R. W. Scarff has found that atheromatous lesions can easily be produced in rabbits by the addition of cholesterol to normal diets. Some months after feeding is discontinued the lesion assumes a form which both macroscopically and microscopically bears a strong resemblance to human atheroma. He also found that an increase in blood cholesterol was not accompanied by any alteration in blood pressure.

J. A. Sampson has studied the question of metastatic endometriosis. He has confirmed Meyer's observations in regard to the extraendothelial course of endometrial tissue in a direct endometriosis. He holds, however, that the vessels are usually venous sinuses and not lymphatic vessels and that the menstrual reaction alongside a vessel may cause rupture of its endothelial lining with escape of the endometrial tissue into the lumen.

R. H. Jaffé has investigated the fat content of the thyroid gland. He has recorded observations which point towards some relationship between the fat metabolism and the function of the gland.

H. Okkels has described pathological changes in the nerves of stomachs affected by chronic ulcer. He holds that a perineuritis occurs and that certain proliferative changes, central cicatrix neuromata, are also found. These changes he regards as possibly being responsible for the pain accompanying gastric ulcer.



## Abstracts from Current Medical Literature.

### MORBID ANATOMY.

#### Vitamin A Deficiency and Metaplasia.

SEVERAL observers have reported the occurrence of changes in the lining epithelium of the larynx, trachea and ducts of the Meibomian, submaxillary, sublingual and parotid glands of rats that have been fed on a diet deficient in fat-soluble vitamins. Harry Goldblatt and Maria Benischek (*The Journal of Experimental Medicine*, November 1, 1927) point out that the diets used by these workers were actually deficient in vitamin A, vitamin C and vitamin D. They have endeavoured to determine whether a single vitamin deficiency (vitamin A) can produce metaplasia and other changes in glandular organs. They have used rats for their experiments. The animals were divided into three groups. Those of Group I were given a diet deficient in vitamin A and vitamin D, those of Group II were given a diet deficient in vitamin A alone, those in Group III were given a normal diet. Abscesses were found in the base of the tongue of practically every animal of Group I and Group II in which this organ was examined. Xerophthalmia was found in some of the rats of these groups and as well an occasional abscess was found in the submaxillary gland. In a few instances in animals of these groups dilated ureters or dilated external bile ducts were found. In no instances were abscesses of the tongue or of the submaxillary glands found in the rats of Group III. Microscopical examination failed to reveal metaplastic changes in any other organ when there was none in the respiratory tract. The changes varied from small isolated nests to complete transformation of the epithelium in the sections examined. The changes appeared with or without accompanying inflammation. They were similar to those described by other observers, namely a transformation of the cylindrical, cuboidal or transitional to the squamous keratinizing type. When inflammation was present, the changes were usually more severe. Sometimes in one organ there were large cysts lined completely or in part by squamous epithelium, filled by keratohyaline material and without any signs of inflammation and in another portion there was a large abscess lined partly, sometimes completely, by squamous keratinizing epithelium. The authors conclude that the inflammatory process occurs coincident with or subsequent to the metaplasia and is not responsible for the initiation of the changes. They also record particulars of an experiment designed to show that lack of food played no part in the initiation of the metaplasia. The total number of rats used was sixty-three. Nineteen were placed in Group III, eighteen in Group II and

twenty-six in Group I. Metastatic changes were found in seventeen and twenty-three of the last two groups respectively.

#### Staining of Thyroid Colloid.

EVELYN E. HEWER (*The Journal of Pathology and Bacteriology*, October, 1927) has studied the activity of the thyroid gland in relation to the staining reactions of the colloid. The author recognizes that the material stored with the colloid represents probably the reserve secretion rather than the secretion which is being passed into the blood. She has used human material throughout her investigations. It is frequently stated that the activity of the thyroid gland is directly proportional to its iodine content. The usual method of expressing the iodine content does not give values that are comparable from the point of view of the activity of the gland in the organism. The iodine should be expressed in milligrammes per kilogram of body weight. Since for this it is necessary to know the weight of the whole gland and the weight of the individual, it cannot usually be done. The author found that in six fetuses at full time the iodine was 0.0617 milligramme per kilogram body weight. In the author's staining experiments the following stains were used: Scott's hæmatoxylin and Biebrich scarlet, Weigert's resorcin-fuchsin, Mallory's aniline-blue-orange G, Scott's hæmatoxylin and congo red. It was found that neither fixation nor anæsthetic affected the staining, except possibly with the resorcin-fuchsin method. With each stain a variation was obtained according to the acid-alkaline reaction of the colloid. When the reactions of the several stains were compared, in no case was a reversal of staining obtained. It was possible to gauge the degree of activity of the stored thyroid secretion by the staining reactions of the colloid. Freshly secreted active material gave an alkaline staining reaction, whereas old or inactive material was acid. The relationship between the activity of the gland as interpreted by pathological examination was compared with the activity as interpreted by staining reaction and it was found that the activity of a portion of gland removed at operation was not always directly related to the basal metabolic rate. The author points out, however, that the portion of gland selected for microscopical examination may not be typical of the state of activity of the whole organ, as no gland varies more than the thyroid in the condition of the different parts. Further, it is possible that the colloid may contain none of the active principles of the secretion when these are being passed very rapidly into the blood or that the active principles may be held back in the colloid and so prevented from affecting the metabolism.

#### Anthracotic Silicosis.

S. L. CUMMINS (*The Journal of Pathology and Bacteriology*, October,

1927) discusses the effects of coal dust upon the silicotic lung. It has been held that the coal helps colliers to deal with the small amount of stone dust that they actually do inhale. The author describes the pathological findings in the lungs of a man, aged forty-three years, who worked regularly with machine drills on hard headings from 1913 to 1917. For the next three years he worked as an ordinary collier at the coal face. Symptoms then made their appearance and he died in March, 1926. In sections of the lungs from the "solid" portions of the upper lobes there was hardly any aerated tissue left except in the few areas where the alveolar structure was greatly altered by emphysema. For the most part the lung parenchyma was replaced by dense fibrous tissue in which were caught numerous collections of dust-containing macrophage cells. Although numerous sections were examined, no trace of tuberculosis could be found and it was clear from the histological preparations that the patient died from dyspnoea due to the fibrotic and desquamative changes brought about by silicosis and the retention of collections of dust in the lung tissue. The author refers to an experiment of Mavrogordato in which three groups of guinea pigs were used. One was exposed to silica alone, another to a similar amount of silica followed by coal and the third to a similar amount of silica preceded by coal. After six months the animals were killed and it was found that the lungs of the animals of the first group were grey, those of the second black and those of the third white. The patient described by the author is regarded as having been exposed to conditions somewhat similar to those arranged for Mavrogordato's second group of guinea pigs. The author finds it difficult to avoid the conclusion that an early stage of silicosis, resulting from four years' exposure to stone dust, led to blocking of the lymph drainage of the lung. The accumulation of coal dust in the lung tissue through the silicotic interference with lymph drainage increased until the accumulated coal dust, acting like a foreign body, brought about extensive destruction of lung tissue and, accentuating the effects of the preexisting silicosis, led to the death of the patient. Although coal dust has earned the reputation of being harmless because of the ease with which it is got rid of from the healthy lung in the concentrations usually encountered in coal mines today, when any factor exists to hinder its elimination, it is capable of accumulating in the lungs and leading to serious or even fatal disease.

### MORPHOLOGY.

#### The Theory of Discontinuous Synapses in the Spinal Cord.

O. W. TIEGS (*The Australian Journal of Experimental Biology and Medical Science*, December 16, 1927)

has reviewed the evidence on which is based the theory of discontinuous synapses in the spinal cord. The almost general acceptance of this view during the last thirty years is in the main due to its chief supporter, Ramon y Cajal. The author points out that the teaching of Cajal that there is a protoplasmic discontinuity between the elements of a reflex arc has been replaced in recent years by the knowledge that the terminations of motor nerves upon muscle are definitely hypolemmal, whilst the ultimate ramifications in the receptive organs are intraprotoplasmic and not interprotoplasmic. The theory of discontinuous synapses was formulated upon histological study of Golgi preparations and on the indirect evidence obtained from degeneration from experiments and observations on embryonic tissue. The evidence of Golgi preparations is not decisive; it rests upon the fact that in some preparations axones and their collaterals stain deeply, while the nerve cells do not stain; the collaterals also often end freely. The author holds that this free end of the collaterals is valueless as evidence in support of a discontinuity at the neurone junction, since if the collaterals are traced backwards towards the white matter they often end blindly and this is definitely due to incomplete staining. By means of studies on reduced silver material it was found that fine collaterals ended in minute "end buttons" close to the body of the nerve cell. Held found that these "end buttons" were in direct continuity with the cell protoplasm. The author's studies lead him to the conclusion that the collaterals which have arisen from the longitudinal axones of the white matter by the separation out of individual neurofibrils, traverse the grey matter of the cord and after undergoing considerable branching penetrate the dendrites of the nerve cells. They pass as neurofibrils along the dendrites to the middle of the cell, where they form a perineuronal network which Cajal himself observed, and from this network a relatively small number of neurofibrils enter the axone. The conclusion is unavoidable that the neurofibril is the conducting unit of the central nervous system.

#### The Teaching of Anatomy.

E. MARTINEZ (*Vida Nueva*, July 15, 1927) regrets the fact that in his school of medicine anatomy is taught as it was fifty years ago. A student is expected to study a hundred details of anatomy and to forget ninety-nine of them. He studies a bone and learns that such muscles are inserted in certain situations and commits these details to memory without any conception of the form, size or function of the said muscles. This is about equivalent to learning a paragraph of Goethe in German without having any knowledge of the German language. As no idea is fixed in the brain unless it is associated with another idea

more easily understood or fundamental, some system is needed which will enable the student to group and entwine his concepts so that they may be definitely fixed in his mind. If, for example, in studying a muscle, there were briefly described to him its function and the relation between its size and the power which it develops, and the lever action it produces by its insertion into a tuberosity, the student would more easily remember the important facts. Related branches of the subject should certainly be studied at the same time, but not with the unnecessary wealth of detail which is presented in most works on anatomy. It is advantageous to study in detail such subjects as the distribution of the branches of the trigeminal nerve, because each has its importance in practice. To make a detailed study of the insertions of numerous digitations of a muscle which have no separate significance, is to cumber the memory with useless ballast. No textbook is published on these lines, but it seems to the writer that such a compilation would be a worthy object for a professor of anatomy whose mission it should be as a teacher to simplify and facilitate study, not to make it more complicated. Anatomy, practically speaking, has not advanced at the same rate as some of the cognate subjects of the medical curriculum and on this account not so much time can be spared for it as in times past. The English schools are accused of handing over the teaching of anatomy to surgeons and of regarding it only from the point of view of its application to surgery. This accounts for the backwardness of the science in England. Teaching should aim at being more practical and less theoretical. The teaching in the Johns Hopkins University is quoted as a good example. Each student must make a model in clay of the brain and colour the convolutions according to functions. This model the student retains and in later life keeps it in his consulting room and thus keeps fresh the studies of his early years. The dissecting room should be available at all hours of the day to students so that as much time as possible may be spent there under the guidance of capable instructors. Every effort should be made to preserve the cadavers by methods which will prevent undue distortion and colour changes.

#### The Enteric Plexuses.

CATHERINE J. HILL (*Philosophical Transactions of the Royal Society of London*, Series B, Volume 215) states that the constitution of the enteric plexuses and their rôle in the initiation and regulation of gut movements are problems which have been discussed by numerous investigators and the literature relating to them is voluminous. She gives an account of research done by a modified Bielschowsky silver and the methylene blue techniques. She concludes

that there are two types of cell in the enteric ganglia: (i) multipolar cells with short dendrites, present only in the myenteric plexus (Type I) and (ii) cells with long dendrites, present in both myenteric and submucous plexuses (Type II). She suggests that the latter are motor and the former are intercalary or association cells. The plexuses are essentially composed of neurones and the processes of neurones which are in synaptic relation with each other. In the mammals studied there is no evidence of the existence of a nerve net in either of the gut plexuses. Synapses of two morphologically distinct types are present in the ganglia, namely (i) pericellular terminal networks which are derived from preganglionic axones of the vagal inflow and which are found in the cell bodies of neurones of Type II and (ii) more diffuse receptive endings derived from dendrites of local ganglion cells and found on neurones of both types. The intraganglionic fibres are constituted in at least two-thirds of their entirety of the processes of enteric neurones, whilst processes of these latter also form a large proportion of the fibres in the interganglionic fibre-tracts. Fibres from the submucous plexus pass up to the *muscularis mucosa* and to the smooth muscle in the villi to terminate in relation to muscle cells. Immediately below the epithelium of the villi is a rich fibre plexus the fibres of which penetrate the epithelial cells and ramify round their basal halves. These endings are probably sensory and it is suggested that they are derived from extrinsic fibres. The author further discusses the probable relations of the fibres from the motor Type II cells of the plexus and sympathetic fibres to the muscle cells, but could arrive at no definite conclusion. The fibres of the intramuscular plexus or approaching the muscle cells break up each into a number of fine fibrils which form a complicated network extending over the surface of the cell and from this arise delicate fibrillae which penetrate into the substance of the muscle cell.

#### The Hypoglossal Nucleus.

FRANCIS F. SCHWENTKER (*Anatomical Record*, June 25, 1927) states that microscopical examination of consecutive sections of the human brain stem reveals an oval group of small cells lying within the hypoglossal nucleus or close to its medial border at about the level of the junction of its caudal and middle thirds and gives an account of an investigation undertaken in order to determine the position, frequency and morphology of the group of cells. He considers three hypotheses concerning its function, namely, it may be a portion of the *nucleus funiculi teretis*, or it may be made up of cells of primary sensory neurones innervating the tongue musculature and thus be proprioceptive in character or finally it may be a source of autonomic fibres to the tongue.

## Special Abstract.

### THE TOXÆMIAS OF PREGNANCY.

A CLINICAL and biochemical study of the toxæmias of pregnancy has been made by Dr. J. N. Cruickshank, Dr. J. Hewitt and Dr. K. L. Couper.<sup>1</sup> Their work was carried out at the Research Department of the Glasgow Royal Maternity and Women's Hospital and their report has been published by the Medical Research Council of the Privy Council.

The report is based upon the records of two hundred patients who suffered from albuminuria during the second half of pregnancy. No persons are included who suffered from albuminuria due to infection of the urinary tract or who suffered from *hyperemesis gravidarum*. The patients therefore were suffering from "various common forms of toxæmia of the second half of pregnancy universally referred to in obstetrical practice as 'toxæmia of pregnancy'." Parallel observations were made on a control series of forty-two normal pregnant women at the same period of pregnancy.

The authors have adopted a clinical classification and have divided the patients into several groups. Those in Group I (albuminuria) suffered from albuminuria of renal origin during the second half of pregnancy. This was the chief symptom and most of the women in the group had no other signs of toxæmia. A few manifested other signs which were too slight or of too transitory a nature to permit of the patient's name being placed in any of the other categories. Patients in Group II (preeclamptic toxæmia) manifested symptoms of more or less severe toxæmia in addition to albuminuria, but did not suffer from convulsions. Patients in Group III (nephritic toxæmia) had albuminuria as the main symptom, but in addition showed signs of chronic renal disease, accompanied in some cases by cardiac involvement. The authors admit that this group is not so homogeneous as the others, but point out that its retention is justified because it includes a well recognized variety of toxæmia of pregnancy. Patients in Group IV (eclampsia) had definite convulsions of the usual eclamptic type in addition to other signs of severe toxæmia. The patients forming Group V were all in good health and were under observation on account of pelvic deformity or some other condition likely to give rise to obstetrical difficulty. They were all in the second half of pregnancy. Group I comprised fifty-five patients, Group II thirty-four patients, Group III forty-two, Group IV sixty-nine and Group V forty-two patients.

#### Clinical Investigations.

##### Symptomatology.

In Group I, the albuminuric group, the patients all had a relatively mild degree of albuminuria and had at most only a slight elevation of blood pressure. Pronounced oedema was met with in only one-quarter of the patients and severe headache was rare, although about one-half of the patients experienced mild inconstant discomfort. Vomiting, visual disturbance, giddiness and drowsiness were uncommon, while the more ominous symptoms, epigastric pain, oliguria, increase of pulse rate and elevation of temperature, were not observed. Patients of Group II manifested symptoms of a definitely more severe type. Thus nine-tenths of them were oedematous and in these the extent and degree of the oedema were greater than in the oedematous patients in Group I. Facial oedema in particular was more common and the onset of the swelling tended to be sudden and its spread rapid. Severe headache, typically of a constant nature, was complained of by about one-third of the patients. Vomiting and visual disturbance were present in about one-half of them. Epigastric pain was noted in a few cases and in some a certain amount of mental disturbance occurred. In one-half of this group the systolic blood pressure exceeded 160 millimetres of mercury and in over 60% of cases the urine contained more than 0.6% of albumin. In this group the blood pressure subsided rapidly under treatment, while

the amount of albumin in the urine likewise manifested a quick though less abrupt disappearance. The incidence of patients in the nephritic group, Group III, did not appear to differ greatly from that observed in patients of Group II. The most noticeable difference was the tendency to a slow fall from or a maintenance of the original level of the blood pressure when it was raised and a similar behaviour on the part of the albuminuria when the amount of albumin in the urine was high. Other distinguishing features were the less sudden onset of symptoms, the occurrence of facial oedema as an isolated phenomenon, the occurrence early in pregnancy of severe visual disturbance and the fact that blindness might cause the patient to seek medical advice in the first instance. In some of the nephritic cases the degree of albuminuria was high, out of all proportion to the severity of the other symptoms. Another feature of the patients in the nephritic group was the presence of large variations in the amount of albumin in the urine, these daily variations being independent of the general degree of albuminuria. In the other groups the rise or fall in the amount of albumin was more or less continuous and did not show these daily variations. According to the standard of the Eclampsia Committee of the Royal Society of Medicine, the eclampsia of 75% of the patients in Group IV was regarded as severe. The average number of fits per patient was 10.6. The largest number of fits per patient occurred in the *intrapartum* variety of eclampsia. In 75% of cases the fits ceased on delivery—a figure corresponding exactly with that reported from Dublin. There was a general correspondence between the number of fits, the depth of the coma and the height of the blood pressure. The patients of the eclamptic group were characterized, too, by a rapid fall of the blood pressure and a rapid decrease in the amount of albuminuria under treatment.

In their description of the different symptoms the authors point out that mental symptoms were manifest in more than one-seventh of the toxæmic patients (Group II) and in more than one-third of the eclamptic patients. The type of disturbance varied, but a remarkable feature in many instances was the occurrence of amnesia. They draw particular attention to this abnormal mental condition which was present in a number of the eclamptic patients, for they had been unable to find any references to such a symptom in the descriptions in the literature of the symptomatology of eclampsia. This amnesia is not simply the state of temporary confusion and loss of memory which is seen in most eclamptic patients shortly after they regain consciousness. It is rather a complete and apparently permanent loss of memory of events which occur before the onset of the acute stages of the illness. The patient behaves rationally during that period, but appears to be in a condition comparable to postepileptic automatism.

A detailed description of the blood pressure in the various groups is given. In Group I the systolic blood pressure exceeded 140 millimetres of mercury in only 27.5% of cases and the average reading for the whole group was only 125 millimetres. The average reading for the patients in Group II was 155 millimetres. Among the nephritic patients in Group III a still higher level was found, the group average being 164 millimetres of mercury. The average systolic blood pressure in the eclamptic patients was 168 millimetres. Fewer than 20% of the patients had a systolic blood pressure of less than 141 millimetres and in 22% the reading was above 200 millimetres. Much information may be gained by observing the rate at which the high blood pressure subsided to normal in the several groups. In the albuminuric, toxæmic and eclamptic group the general tendency was towards a rapid decline, whereas in patients of Group III the high level was almost invariably maintained. The authors illustrate this statement by detailed figures and point out that repeated observation of the blood pressure may be regarded as one of the most important parts of the examination of a patient who is suffering from toxæmia of pregnancy. At the same time it is unsafe to rely upon this alone and the significance to be attached to the variations in blood pressure must be modified in certain cases in the light of the other clinical facts. A comparison between the clinical courses and the variations in blood pressure in the series indicates that: (1) a high

<sup>1</sup> "The Toxæmias of Pregnancy: A Clinical and Biochemical Study," Special Report Series, Number 117, Medical Research Council of the Privy Council, 1927.



blood pressure is always indicative of danger, (ii) in eclampsia and in nephritic toxæmia a low or normal pressure does not necessarily indicate freedom from danger, (iii) the rate of fall in the blood pressure is a valuable aid in distinguishing preeclamptic from nephritic toxæmia, (iv) the fall to normal from an abnormally high blood pressure is a good prognostic sign, (v) a fall to an abnormally low level is of grave import, (vi) an increase in blood pressure is ominous.

The amount of albumin in the urine appears to have considerable significance in diagnosis and prognosis. The patients in Group I seldom manifested any high degree of albuminuria. In about two-thirds of them the amount of albumin at no time exceeded 0.1% and in the remainder it fell below that figure in most instances within a few days. In the patients in Group II the degree of albuminuria tended to be much higher than in those of Group I. As already mentioned, it exceeded 0.6% in over 60% of the patients, but the rate of diminution of albumin was rapid. In Group III the patients with high blood pressure tended to have a more pronounced degree of albuminuria than those with a low blood pressure and the rate of diminution in the whole group was in general slower than in the first and second groups. Most of the eclamptic patients had very large quantities of albumin in the urine on admission, but one-fifth of them had less than 0.1%. In spite of the high proportion of patients with gross albuminuria the tendency was towards a rapid diminution in the amount.

A comparison of the blood pressure records with the results of estimations of albumin in the urine showed a general correspondence between the two, but it seemed to the authors that the latter afforded an earlier indication of danger than the blood pressure readings in the case of preeclamptic toxæmia. In nephritic toxæmia and in eclampsia, on the other hand, an impending increase in the severity of the toxæmia seemed to be indicated sooner and more accurately by blood pressure observations than by the estimations of the amount of albumin in the urine. In distinguishing between nephritic and preeclamptic toxæmia the rate of fall in the blood pressure appeared to be a better guide than the rate of fall in the amount of albumin in the urine. In eclampsia the behaviour of the blood pressure seemed to be a safer guide to progress than the variations in the degree of albuminuria.

#### *Treatment.*

The treatment adopted was practically uniform throughout and in the case of Groups I, II and III was almost identical. The main points were: (i) the withholding of all food including milk until the amount of albumin in the urine was less than 0.1%; (ii) thorough evacuation of the colon, frequent loose stools being procured by adequate doses of sulphate of magnesium and of jalap; (iii) stimulation of moderate diaphoresis by means of warm clothing, hot bottles and the electric cage if necessary. The patient was allowed to drink as much as she wished, but no attempt was made to obtain an excessive fluid intake. In the treatment of eclamptic patients a specially heated bed was used. The bowel was emptied by a soap and water enema, but gastric lavage was not practised unless the patient was vomiting severely. Saline solution was given by the rectum until the patient began to take a reasonable quantity of fluid by mouth. When the fits were numerous or severe, "Veratrine" was given in doses of 0.5 cubic centimetre, provided the systolic blood pressure was at least 160 millimetres of mercury and the pulse rate 120 per minute. If these conditions were not fulfilled morphine was substituted. Milder fits were controlled by chloral hydrate and bromide of potash. Labour was terminated by forceps if the fits continued into the second stage, but *accouchement forcé* and Cæsarean section were not performed. Diuretics were tried, but failed to prove efficacious.

#### *Maternal Mortality.*

In Group I there were no fatal cases. One patient in Group II whose condition is described as atypical, died. Of the forty-two patients in Group III six died and the number of fatal cases in Group IV was six.

#### *Puerperal Sepsis.*

Puerperal sepsis was a frequent complication in all groups. It was present in about one-fifth of the eclamptic patients, one-third of the albuminuric and in about one-fifth and one-fourth respectively of the patients with preeclamptic and nephritic toxæmias.

#### *Examination of the Blood and Urine.*

The substances estimated in the examination of the blood were: non-protein nitrogen, urea nitrogen, uric acid, amino-acids, preformed creatinin and chlorides. In all the blood analyses the methods of Folin and Wu were adopted. The results of the estimation in the several groups are tabulated. The maximum and minimum readings are given, together with the mean and its probable error. The authors point out that the results of blood analysis showed such great variations that it was difficult and often impossible to make a diagnosis of the type of toxæmia from the chemical findings alone. Certain general tendencies, however, are noted. The non-protein nitrogen of the blood tended on the whole to be greater in amount than in the normal pregnant woman approaching term, but this increase was not a great one, save in exceptional cases. The general conclusion is that there is typically no gross azotæmia in any of the four clinical varieties of toxæmia studied. The urea nitrogen of the blood, like the non-protein nitrogen, did not manifest any constant tendency to great increase over the normal amount, but a certain number of exceptions to the general picture were found. The highest values for urea nitrogen occurred in the blood of the eclamptic patients and this was in striking contrast to the low values which characterized many of the toxæmic or preeclamptic patients. It was noted that in a large proportion of the preeclamptic patients an abnormally low proportion of the non-protein nitrogen of the blood was present as urea nitrogen. This is of interest in view of the fact that small quantities of urea nitrogen were found in this group. At the same time it is pointed out that a similar alteration in the nitrogen distribution occurred in the blood of patients in other groups, though not with quite such frequency as in those in the preeclamptic stage. Uric acid was as a rule quite definitely increased in the blood of eclamptic patients. This was not so in other groups. It is curious that in the toxæmic or preeclamptic patients the tendency was for the amount of uric acid to be low; in 17% of them its value was less than the lower limit of the corrected mean in the control group. Amino-acids which were estimated in part of the series only, manifested no noteworthy quantitative deviation from the normal, except in the eclamptic cases; in these there was a tendency to a moderate increase. Preformed creatinin resembled uric acid in being most abundant in the blood of eclamptic women and least abundant in the toxæmic, while in all the abnormal groups it was slightly more abundant than in those of the control group.

The authors point out that in interpreting these results the peculiarities of the chemical blood picture during the latter months of pregnancy should not be overlooked. During this period the nitrogen metabolism is maintained at a relatively low level, though well above the starvation limit, so that the characters of the blood and urine correspond more or less to those found in low states of nitrogenous metabolism. Tendencies to certain modifications of the blood picture of the pregnant woman were seen, however, and these tendencies appeared to indicate that in the mildest form no particular changes appear in the blood. In the preeclamptic toxæmia there is an exaggeration of those features which characterize the later months of pregnancy while the development of actual eclampsia upsets the equilibrium to a considerable degree, leading in many instances to a distinct, if moderate, rise in the total amount of the nitrogenous non-protein constituent of the blood and to an increase in the amount of creatinin and uric acid. The presence of chronic nephritis tends to produce a blood picture intermediate between that of eclampsia and that of preeclamptic toxæmia with a greater resemblance on the whole to the latter. It is clear that with few exceptions gross azotæmia is not a feature of any of the typical groups described, though it may occur in a few atypical cases of nephritic toxæmia and eclampsia. In regard to the chlorides it was found that the mean

values of the readings in each group were within normal limits and none manifested any characteristic alteration in the chloride content of the blood. The authors point out that the question of the chloride content of the blood opens up a number of difficult general problems such as the relation of chloride excretion and retention to the excretion and retention of water and the mechanism and production of oedema. These aspects are not considered by them.

The volume of urine excreted in twenty-four hours was greatest as far as could be ascertained in the groups of albuminuric, preeclamptic toxæmic and nephritic toxæmic patients; it was least in the eclamptic patients, though the mean volume in this group was slightly in excess of that of the normal control patients. The total non-protein nitrogen excretion was low in all groups, including the controls. Judged by the urea concentration test, the greatest defect in urea excretion was found in the albuminuric and nephritic groups, while the preeclamptic and eclamptic groups approached more nearly to normal. When the urea concentration factor and the number of grammes of urea excreted during the three hours of the urea concentration test were considered, it was found that the five clinical groups could be arranged in almost identical order in regard to efficiency of urea excretion, but this order differed from that obtained by the use of the ordinary urea concentration test. The anomaly is regarded as barely significant when the large variations in individual cases are considered. The authors believe that the greatest degree of impairment of the power to excrete urea occurs in the nephritic and eclamptic patients. They admit, however, that the evidence on this point is rather equivocal. They have investigated the assertion by Harding and Van Wyck that in the toxæmias of pregnancy there is considerable interference with the power to excrete chlorides. They have given increasing doses of sodium chloride to toxæmic patients without ill effect and so dispose of the contention of these two writers.

#### Test of Hepatic Function.

As a result of their tests of hepatic function the authors conclude that none of them is of real service in the diagnosis or prognosis of the various forms of toxæmia of pregnancy. They could find no correspondence in the abnormal conditions between the results of the liver tests and the severity of the clinical manifestations. They conclude that there is no justification for the suggestion made by Comyns Berkeley and his colleagues that positive results should be taken as an indication for terminating pregnancy.

#### The Ætiology of the Toxæmias.

The report concludes with a discussion on the results of the investigation in relation to current views of the ætiology of the toxæmias. Lack of space prevents an adequate presentation of the discussion on this point. It is well, however, to point out that the authors state that while there is much to suggest that a common cause is to be found for all the clinical conditions included in the term toxæmia of pregnancy, it must be admitted that there is as yet no proof that there are not several causes and that the toxæmias do not form a homogeneous group from an ætiological standpoint. As a result of their clinical and chemical observation and by the evidence supplied by the work of others they are led to the conclusion that if the toxæmias of pregnancy have a common cause, it is some form of intoxication by the breakdown products of placental tissue, probably some of the higher products of protein catabolism which, like the breakdown products of lecithin, have a powerful action even when present in small amounts.

### British Medical Association News.

#### SCIENTIFIC.

A MEETING OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, Adelaide Street, Brisbane, on October 7, 1927, Dr. H. V. Foxton, the President, in the chair.

#### Diagnostic Difficulties.

DR. R. GRAHAM BROWN gave a demonstration of the following cases which were freely illustrated by lantern slides and photographs, mainly to point out errors in diagnosis made both by himself and other practitioners. He thought that a lot could be learned from such reports.

The first was a case of sarcoma of the infraorbital nerve occurring in a woman, aged forty-five. He had done a partial excision of the upper jaw and had removed the tumour as far back as to within the immediate neighbourhood of the *foramen rotundum* in February, 1927. The growth had extended into the skull, following the course of the second division of the fifth nerve and as the symptom of irritation of the geniculate ganglion had become so unbearable, he had opened the skull. He had used the hyperzygomatic approach, had sectioned the posterior root of the geniculate ganglion and had done an intracapsular extenteration of tumour of the geniculate ganglion and its branches. The patient had made an uninterrupted recovery. Both operations had been performed under synergistic anaesthesia.

He demonstrated that so far the cornea had remained intact and that the usual deviation of the jaw, on opening, which followed destruction of the motor root of the geniculate ganglion, was present. Professor Welsh had reported on the growth as a spindle celled sarcoma which had progressed along the sheaths of the nerves and which afterwards had invaded the nerves themselves.

The second was a case of cardiospasm occurring in a woman, aged sixty-four, who had been under treatment for eighteen months and had been diagnosed successively as suffering from carcinoma.

Several lantern slides demonstrated the progress of the condition. Mechanical stretching of the cardiac opening after gastroscopy had so far proved of benefit inasmuch as the patient had been gradually putting on weight. One characteristic was that the spasm had involved the whole of the stomach.

The third was a case of extensive osteomyelitis of the frontal bones associated with chronic pansinusitis occurring in a man aged thirty-seven. This condition had followed radical frontal sinus operation and the X ray picture showed that before the operation there was an area of chronic osteomyelitis. The Wassermann test yielded a positive response.

The last case was that of a cerebellar cyst with definite internal hydrocephalus occurring in a girl aged thirteen and a half. Definite sellar absorption was present and the fields of vision were of the bitemporal hemianopic type. The only symptom of cerebellar tumour remaining was that of cerebellar seizures. All the reflexes were of a normal variety and there was no Rombergism.

The condition had been treated as one of pituitary cyst and Hirsch's operation had been performed under local analgesia. The presence, however, of clear fluid on puncturing the sellar *dura mater* had indicated an error in diagnosis. The patient had died a few days later from sudden respiratory failure. The *post mortem* examination had revealed a large gliomatous cerebellar cyst occurring in the vermis, which produced internal hydrocephalus and a cystic protrusion of the floor of the third ventricle. This had produced in its turn an absorption of the posterior clinoid processes and dilatation of the pituitary fossa. There was also a definite medullary pressure cone which accounted for the sudden respiratory failure. Several photographs of the condition found *post mortem* were shown.

#### Tumour of the Upper Jaw.

DR. A. J. REYE reported a case of tumour of the upper jaw, illustrating his remarks by skiagrams. A discussion followed in regard to the type and character of the neoplasm and the treatment.

#### Stones Under the Prepuce.

DR. A. G. ANDERSON read the history and showed a screen picture of a number of definitely calcareous stones which had been removed by him from under the prepuce of a Chinese who suffered from phimosis.

#### Pyonephrosis.

DR. E. S. MEYERS showed the pyelograms taken in a case of pyonephrosis and described the patient's condition.

### Mind Healing.

DR. JOHN BOSTOCK read a paper entitled: "Mind Healing" and illustrated his remarks by lantern slides (see page 143).

PROFESSOR J. P. LOWSON wished to thank Dr. Bostock for his very instructive paper; he was especially interested, he said, in the lantern slides. He considered that Dr. Bostock had given his audience an excellent *résumé* of the modern methods of psychotherapy. There were two points, however, on which he to some extent joined issue with the speaker. In his (Professor Lowson's) opinion rest, that greatest of all therapeutic agents, should be used in psychotherapy with great discretion and discrimination. Often, he added, it might actually be dangerous and do more harm than good. On the whole, he thought, rest was often recommended in mental cases much too recklessly and without discrimination. The other point on which he disagreed with Dr. Bostock was with regard to psychoanalysis. Dr. Bostock's remarks in this regard would seem to give the impression that psychoanalysis was a method of treatment in which almost everything was allowable and allowed. He was inclined to disagree with Dr. Bostock on this point and for his part would narrow the definition of psychoanalysis down much more than the speaker.

He quite agreed with regard to the necessity and advisability in psychotherapy as in other branches of therapeutics of adapting the treatment to the needs, factors and conditions of the particular case. In his own experience he was enormously impressed with the value of the method known, rather loosely, as psychoanalysis.

DR. W. N. MARKWELL joined in thanking and congratulating Dr. Bostock. He then emphasized the value and importance of psychological concepts in the study of mental disease and derangement. Dr. Bostock, he said, had not mentioned such terms as "psychiatry" *et cetera*.

Up till the end of the previous century there had been no real science of psychopathology and psychiatry. He then referred in glowing terms to the work of Freud on the subject. He disagreed with some of the Freudian concepts, however, such as that of the unconscious (in the Freudian sense) and that of repression. He referred to the unfortunate wrapping-up of all these things in the sexual complex. Possibly, he thought, Freud's own psychological make-up might explain this rather mechanistic and material explanation (or rather, hypothesis) of his. He went on to remind his listeners that the science of psychology was only in its infancy. He expressed agreement with Dr. Bostock's way of presenting the material and considered that in the matter of treatment medical practitioners must be eclectic and he strongly advocated the method of confidence as between patient and physician. The reason, he said, why the psychoanalytical method was successful was because the patient was in a passive, receptive state of mind.

DR. S. F. McDONALD added his quota of praise and thanks, saying that he appreciated the paper on account of its ordinary and very practical applicability. He deplored the attitude of many practitioners towards these matters: the habit, for example, of dismissing the patient as neurotic, neurasthenic *et cetera* without helping him at all. He would go further and say that the wrong and unsympathetic attitude of many medical practitioners towards these unfortunates quite fully explained why so many of these patients passed subsequently into the hands of the Philistines (the ubiquitous quacks and mountebanks who batted on the credulity and gullibility of the public).

DR. E. S. MEYERS thanked Dr. Bostock also for his illuminating and impressive address. He referred to an interesting book on the subject entitled: "The Mental Factor in Medicine" and then mentioned some of the practical difficulties of the average general practitioner in psychopathic conditions. He cited the various "visceral neuroses" (gastric, nervous, circulatory *et cetera*) and thought that the big difficulty was the number of different investigations such conditions implied and necessitated before definite organic trouble could be excluded. He also mentioned what he called the vasomotor neuroses. He would classify mental diseases as follows: (i) the frank and obvious cases of dementia, (ii) the psychasthenics and neurasthenics *et cetera* and (iii) the visceral

neuroses. Finally, he pointed out the great difficulty presented by a neurotic or psychotic lodge patient.

DR. C. F. DE MONCHAUX referred to the use or rather misuse of the term psychoanalysis to connote one distinct and definite form of psychotherapy. Obviously the expression was a gross misnomer; the words had quite a general meaning much more in the diagnostic than the therapeutic sense, but were used quite wrongly to signify a particular form of psychotherapy. He strongly recommended the substitution of some more logical and apposite term for what Freudians and other psychiatrists called psychoanalysis.

DR. H. V. FOXTON was eager to assure Dr. Bostock how much he and all present had enjoyed his interesting paper. He hoped to have the pleasure of hearing Dr. Bostock again. He thought that there was in Brisbane much to explore and exploit in the big field of psychopathy and psychotherapy. He then asked Dr. Bostock's opinion re the removal of tonsils and adenoids in order to cure stammering. He stated that he himself was often in a quandary as to what to do in this regard.

DR. J. BOSTOCK in reply thanked the President and other speakers for their kind words and for the appreciative manner in which his paper had been received. He agreed with some of the speakers that psychoanalysis was a bad and most unfortunate term and suggested in its place, as much more apt and preferable, Janet's term, mental liquidation. Dr. McDonald's point with regard to the regrettable attitude of many practitioners, especially towards borderline cases, he considered a very important one. He was interested to know that Dr. Meyers had found so many visceral neuroses and as to Dr. Foxton's query he found it difficult to see how stammering could be cured by tonsillectomy and the removal of adenoids. He would suggest in such cases the commoner and more probable methods of psychotherapy, as for example the ordinary method of reeducation.

### Correspondence.

#### THE TRANSMISSION OF DISEASE BY INSECTS.

SIR: My attention has been drawn to an article in your journal<sup>1</sup> by Lionel B. Bull, D.V.Sc., on "The Value of Comparative Pathology in the Problems of Human Disease." In discussing the discoveries of Theobald Smith on the transmission of Texas cattle fever by ticks the claim is made that little notice was taken of his epoch-making discovery of a pathogenic organism which could be transmitted only through the agency of an intermediary host; that later malaria and other human diseases were found to be transmitted by a similar agency and that this method was first demonstrated in a disease of animals, the significance of which was not appreciated by the majority of physicians at the time.

While not wishing to detract in any way from the merits of Theobald Smith's veterinary work, it is my duty as the biographer of Manson to point out that this statement of Dr. Bull's is not strictly in accordance with facts. It should now be generally made known it is to Manson that we owe the idea of the insect transmission of disease.

His original paper on the subject is entitled "On the Development of Filaria Sanguinis Hominis and on the Mosquito Considered as a Nurse" (*Transactions of the Linnean Society, Zoology*, 1879, Volume XIV., No. 75, page 304), which was read on March 7 of that year. This paper was further supplemented by a fuller statement illustrated by figures of the developmental stages of the filaria in 1884 (*Transactions of the Linnean Society, Zoology*, Volume II, Part X, page 367), read on March 6.

In these papers is condensed the work he had been engaged upon since his first observation on the changes undergone by the embryo filariae in the stomach of the mosquito, on August 10, 1877, in Amoy, China. To quote the significance of the discovery in his own words: "I followed it up as best I could with the meagre appliances at my disposal, and, after many months of work, often

<sup>1</sup> Supplement to THE MEDICAL JOURNAL OF AUSTRALIA, November 5, 1927, page 343.



following up false scents, I ultimately succeeded in tracing the filaria through the stomach-wall into the abdominal cavity, and then into the thoracic muscles, of the mosquito. I ascertained that during this passage the little parasite increased enormously in size. It developed a mouth, an alimentary canal and other organs. . . . Manifestly it was on the road to a new human host." Although Manson's investigations did not show exactly how the grown filaria larvæ reach their final host, he did show precisely and conclusively how the embryo filariæ have to be freed from an infected human being and be specially nurtured, while they pass through a larval development outside the human body before they can infect other human beings, and that common house mosquitoes are the necessary agents in their processes of liberation, nurture and dissemination.<sup>1</sup> Manson's work on filariasis thus culminated in a great discovery, one of the major discoveries which in the history of every science are made from time to time by men who, being acute observers, are above all thinkers and make the right use of opportunities that are open to everybody.

From the above statement it will be seen that Manson was the first by readily ascertainable and easily verifiable methods to establish the insect transmission of disease.

These facts are incontrovertible. Manson's discovery was the corner stone upon which all later work was based.

Yours, etc.,

PHILIP MANSON-BAHR, M.D., F.R.C.P.,

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9, Weymouth Street,  
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December 14, 1927.

### Books Received.

ORGANIC INHERITANCE IN MAN, by F. A. E. Crew, M.D., D.Sc., Ph.D.; 1927. London: Oliver and Boyd. Demy 8vo., pp. 240 with illustrations. Price: 12s. 6d. net.

THE OPPOSITE SEXES: A STUDY OF WOMAN'S NATURAL AND CULTURAL HISTORY, by Dr. Adolf Hailborn, translated from the German by J. E. Pryde-Hughes; 1927. London: Methuen and Company, Limited. Post 8vo., pp. 160, with illustrations. Price: 6s. net.

### Diary for the Month.

- FEB. 7.—Tasmanian Branch, B.M.A.: Council.  
FEB. 9.—Victorian Branch, B.M.A.: Council.  
FEB. 9.—Central Southern Medical Association, New South Wales.  
FEB. 10.—Queensland Branch, B.M.A.: Council.  
FEB. 14.—Tasmanian Branch, B.M.A.: Branch.  
FEB. 14.—New South Wales Branch, B.M.A.: Ethics Committee.  
FEB. 20.—New South Wales Branch, B.M.A.: Organization and Science Committee.  
FEB. 21.—Tasmanian Branch, B.M.A.: Council.  
FEB. 21.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

### Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xviii.

BALMAIN AND DISTRICT HOSPITAL: Junior Resident Medical Officer.

COMMONWEALTH DEPARTMENT OF HEALTH: Medical Officer.  
MATER MISERICORDIÆ PUBLIC HOSPITAL, BRISBANE: Resident Medical Officer.

ROYAL HOSPITAL FOR WOMEN, PADDINGTON: Honorary Relieving Assistant Surgeon.

THE ADELAIDE CHILDREN'S HOSPITAL, INCORPORATED: Three Resident Medical Officers.

THE QUEEN'S (MATERNITY) HOME, ROSE PARK, SOUTH AUSTRALIA: Resident House Surgeon.

<sup>1</sup> "Life and Work of Sir Patric Manson," 1927.

### Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.
	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	All Contract Practice Appointments in South Australia. Booleroo Centre Medical Club.
SOUTH AUSTRALIAN: Secretary, 20, North Terrace, Adelaide.	All Contract Practice Appointments in Western Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	Friendly Society Lodges, Wellington, New Zealand.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	

Medical practitioners are requested not to apply for appointments to positions at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

### Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

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